NOTICE

All drawings located at the end of the document.

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Rocky Flats Environmental Technology Site

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

881 CLUSTER CLOSURE PROJECT

(Buildings 881, 881F and 887, and Stacks 1, 2, and 3)

REVISION 0

November 6, 2001

1/311

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REVISION 0

November 6, 2001

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ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_{W}$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U S Department of Energy
DPP	Decommissioning Program Plan
DQA	Data Quality Assessment
DQOs	Data Quality Objectives
EPA	U S Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, Ventilation, Air Conditioning
HSAR	Historical Site Assessment Report
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-Based Paint
LLW	Low-Level Waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum Detectable Activity
MDC	Minimum Detectable Concentration
NORM	Naturally Occurring Radioactive Material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, Accuracy, Representativeness, Comparability and Completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition Survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSC	Removable Surface Contamination
RSP	Radiological Safety Practices
SVOCs	Semi-Volatile Organic Compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total Surface Activity
VOCs	Volatile Organic Compounds

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EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of the 881 Cluster anticipated Type 2 facilities (i e , B881, B881F, B887, and Stacks 1, 2 and 3) Because these facilities were anticipated to be Type 2 facilities, the characterization was performed in accordance with the Reconnaissance Level Characterization Plan (MAN-077-DDCP) All facility surfaces were characterized in this RLC, including the interior and exterior surfaces of the facilities (i e , floors/slabs, walls, ceilings and roofs) Anticipated Type 1 facilities in the 881 Cluster (i e , B881C, B881G, B881H, 881 Tunnel, B890, B890 Pad, and Tanks 66, 022 and 029) will be characterized at a later date during the closure project Environmental media beneath and surrounding the facilities were not within the scope of this RLC Report and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

The RLC encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP) The characterization is built upon physical, chemical, and radiological hazards identified in the facility-specific Historical Site Assessment Report Measurement and sample locations were identified during facility walk-downs performed during the RLC

Results indicate that radiological and beryllium contamination exists in excess of the RLCP prescribed release limits in Building 881, 887 and 881F Asbestos containing materials in both friable and non-friable forms are assumed to exist in all building materials that may contain asbestos in the 881 Cluster Building 881, Rooms 143A and 113, indicated releases of solvents from mechanical equipment operations Portions of Room 143A and 113 floor slabs will be managed for disposal as RCRA Listed Hazardous Waste Fluorescent light ballasts may contain PCBs, and light bulbs may contain lead and mercury PCB ballasts, asbestos containing materials, and any hazardous wastes will be removed and disposed in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations prior to facility disposition All demolition debris will be managed in accordance with Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal,* as applicable Since 881 Cluster Type 2 facilities were constructed prior to 1980, it is assumed that all painted surfaces of these buildings contain PCBs Painted demolition debris will either be disposed of as PCB Bulk Product Waste, or, if meeting the release criteria for all other constituents as noted in the Concrete RSOP, the concrete will be used as backfill onsite

The exteriors of these buildings were surveyed in accordance with PDSP requirements and meet the PDSP release limits Therefore, the exterior PDS surveys of these facilities are considered complete If any future potentially contaminating event were to take place during D&D activities that could contaminate the exterior surfaces of these facilities, then these surfaces shall be resurveyed prior to demolition Additionally, a confirmation smear survey shall be performed of the exterior surfaces prior to demolition To ensure that the facility exteriors remain free of contamination and that PDS data remain valid

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Isolation controls have been established on facility exteriors, and the facilities have been posted accordingly

Based upon this RLCR and subject to concurrence by the CDPHE, the anticipated Type 2 881 Cluster facilities (i e , B881, B881F, B887, and Stacks 1, 2 and 3) are considered to be Type 2 facilities The Type 2 classification is based on the relative complexity associated with decommissioning the facilities The facilities will not require unique or non-standard techniques for decontamination, dismantlement or demolition Although the actual square footage of Building 881 is large (over 245,000 square feet) and the history of operations diverse, the radiological, chemical and physical hazards are not significant (e g , no evidence of transuranic contamination) or overly intermingled and can be controlled through standard means

There have been some indications that potentially contaminated groundwater, could impact the building during decommissioning Groundwater will be managed with the existing building systems to ensure that the water is diverted from the building area during decommissioning (i e , foundation and footing drains will be removed just prior to backfilling the area after the appropriate remediation and demolition are complete)

1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of the 881 Cluster anticipated Type 2 facilities (i e , B881, B881F, B887, and Stacks 1, 2 and 3) Because these facilities were anticipated to be Type 2 facilities, the characterization was performed in accordance with the Reconnaissance Level Characterization Plan (MAN-077-DDCP) All facility surfaces were characterized in this RLC, including the interior and exterior surfaces of the facilities (i e , floors/slabs, walls, ceilings and roofs) Anticipated Type 1 facilities in the 881 Cluster (i e , B881C, B881G, B881H, 881 Tunnel, B890, B890 Pad, and Tanks 66, 022 and 029) will be characterized at a later date during the closure project Environmental media beneath and surrounding the facilities were not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed Among these are the 881 Cluster facilities The locations of these facilities are shown in Attachment A These facilities no longer support the RFETS mission and shall be removed to reduce Site infrastructure, risks and/or operating costs

Before the 881 Cluster facilities can be decommissioned, a Reconnaissance Level Characterization (RLC) must be conducted, this document presents the RLC results The RLC was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Reconnaissance Level Characterization Plan (RLCP) (MAN-077-DDCP) The RLC built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report

1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC effort RLCs are performed before building decommissioning to define the radiological and chemical conditions of a facility RLC conditions are compared with the release limits for radiological and non-radiological contaminants RLC results will enable project personnel to make decommissioning decisions, develop related worker health and safety controls, and estimate waste volumes by waste types

1.2 Scope

This report presents the radiological and chemical conditions of the anticipated Type 2 facilities in the 881 Cluster (i e , B881, B881F, B887, and Stacks 1, 2 and 3) Environmental media beneath and surrounding the facilities are not within the scope of this RLCR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA Both facilities and environmental media will be dispositioned pursuant to the RFCA

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1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this RLC were the same DQOs identified in the Reconnaissance Level Characterization Plan (RLCP) (MAN-077-DDCP) Refer to Appendix D, Section 2 0 of MAN-077-DDCP for these DQOs

2 HISTORICAL SITE ASSESSMENT

Facility-specific Historical Site Assessments (HSAs) were conducted to understand facility histories and related hazards The assessments consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP) Results were used to identify data gaps and needs, and to develop radiological and chemical characterization packages. Results of the facility-specific HSAs were documented in facility-specific Historical Site Assessment Reports (HSARs) Refer to Attachment B, Historical Site Assessment Reports, for copies of the 881 Cluster HSARs In summary, the HSARs identify potential radiological and chemical hazards

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The 881 Cluster was characterized for radiological hazards per the RLCP Section 3 1 describes the radiological characterization process that was performed, and Section 3 2 summarizes the radiological hazards that were identified

3.1 Radiological Characterization

Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on or in the facilities Measurements were performed to evaluate the contaminants of concern Based on facility histories, personnel interviews, and previously collected radiological survey and isotopic data, radiological surveys were conducted for uranium, plutonium, and related radioactive isotopes Therefore, alpha and beta (as an added measure) contamination surveys were performed, and the results were compared to the RLCP uranium and plutonium surface contamination guidelines

A Radiological Characterization Plan (refer to Attachment C) was developed during the planning phase that describes how the facilities were broken-down into survey areas and the minimum measurement requirements per survey area Based on facility histories, building walkdowns, and MARSSIM guidance, existing radiological survey data was broken down into Survey Areas A-G (1st floor), A-2 to I-2 (2nd floor), and, A-1 to B-2 (Basement) Newly acquired data was broken down into Survey Areas G-M

Radiological survey area packages were developed for each newly acquired survey area in accordance with Radiological Safety Practices (RSP) 16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure* Total Surface Activity (TSA), removable and scan measurements were collected in accordance with RSP 07 02, *Contamination Monitoring Requirements* (interior RLC surveys), and RSP 16 02, *Radiological Surveys of Surfaces and Structures* (exterior PDS surveys) Radiological survey data were verified, validated and evaluated in accordance with RSP 16 04, *Radiological Survey/Sample Data Analysis* Quality Control measures

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were implemented throughout the survey and sampling process in accordance with RSP 16 05, *Radiological Survey/Sample Quality Control*

Radiological data, analysis results, and survey locations are presented in Attachment E, Radiological Data Summaries and Survey Maps   Radiological survey packages are maintained in the 881 Cluster Characterization Project files

Interior facility characterization data of B881 already existed from prior surveys performed during the mid-1990's as a baseline to demonstrate compliance with the RFETS Radiological Control Manual   Therefore, only RLC data gaps were specified in the 881 Cluster Characterization Packages   This RLCR summarizes both existing baseline data (Attachment E-1) and newly acquired RLC data (Attachment E-2 to E-8) Exterior facility characterization surveys were obtained as part of a site-wide Technical Basis Document development effort and were performed to satisfy PDSP requirements as well as RLCP requirements   The 881 Cluster exterior facility characterization survey results are also reported in this RLCR in Attachment E-9

It is assumed that all facility systems are potentially contaminated and will be disposed of as LLW or LLMW, and will not affect the facility typing determination   Therefore, only exterior surfaces of facility system piping, ducting, conduit, plenums, equipment, etc were considered during the RLC

It is assumed that all painted surfaces in potential MARSSIM Class 1 and Class 2 PDS survey areas will either be stripped or disposed of as LLW or LLMW during in-process D&D work   Therefore, radiological media and volumetric sampling was not performed during the RLC

Baseline data was utilized to satisfy RLC requirements for 881 Survey Areas A-G (1st floor), A-2 to I-2 (2nd floor), and, A-1 to B-2 (Basement), greater than two meters, less than two meters, and equipment   Refer to Summary Tables in Attachment E-1 for baseline survey data results   The summary tables located in this attachment were derived by consolidating approximately 1,000 pages of individual survey data forms   Refer to the 881 Characterization Project Files for specific sample data results and sample map locations of all baseline data

Newly acquired data was obtained in all accessible trenches, sumps, pits, and elevator shafts in 881 Survey Area H   Refer to the data summary in Attachment E-3 for all newly acquired data results and maps of the B881 trenches, sumps, pits, and elevator shafts

Newly acquired data was also obtained under the stainless steel flooring in B881 in Survey Area I   A total of 45 surveys were obtained beneath the stainless steel flooring located throughout B881   Thirty randomly generated survey points were distributed at stainless steel locations, along with an additional 15 measurements taken at biased locations   Refer to the data summary in Attachment E-4 for all newly acquired data results and maps of the B881 stainless steel flooring

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Newly acquired data was obtained from 1st and 2nd floor data gap rooms (Survey Areas J & K) as identified during the existing baseline survey data review All data gaps were identified and radiological measurements were taken to satisfy the requirements of the RLCP Over 400 alpha and beta measurements were taken on facility surfaces and equipment Refer to the data summaries in Attachment E-5 & E-6 for all newly acquired data results and maps for the identified data gap rooms

Newly acquired data was obtained from the Consent Order Rooms in Survey Area L After proper approvals, radiological data was collected from building surfaces and equipment to meet the requirements of the RLCP Refer to RSP 07 02 Survey Forms dated 9/19/01, 9/20/01, 9/25/01, 9/27/01, 10/1/01, & 10/9/01 in Attachment E-7 for all data results and maps of the Consent Order Rooms

Newly acquired data was obtained in all anticipated Type 2 Support Facilities (887 and Stacks 1, 2, & 3) Refer to the data summaries and maps in Attachments E-2 & E-8 for all newly acquired data results in 887 and Stacks 1, 2 and 3 (Support Building Survey Areas G & M)

Newly acquired data was obtained of all exterior anticipated Type 2 facilities (B881, B881F, B887, and Stacks 1, 2, & 3) Refer to the exterior data summary tables and maps for Survey Units 881-B-001 – 881-B-004 in Attachment E-9 for all newly acquired exterior data results

Attachment E-10 contains the B881 Fixed Contamination Log and semi-annual verification surveys required by the RFETS Radiological Control Manual Refer to RSP 07 02 Survey Forms dated 6/9/01, 6/11/01, and 6/14/01 in this attachment for the latest fixed contamination verification survey results

Attachment E-11 contains an isotopic characterization summary table of the B881 The summary table represents multiple contamination scenarios from air samples, equipment, and building surfaces in the facility AP-2 data collected from known contamination locations (RSC and TSA) were summarized to isotopically characterize B881 It is important to note that the B881 Annex was not included as a part of this summary This annex has limited historical transuranic radioisotope operations All supporting AP-2 data can be found in the B881 Characterization files

Gamma spectroscopy results are located in Attachment E-12 Various locations around the interior and exterior of B881 were analyzed using the Canberra ISOCS system Refer to Gamma Spectroscopy Analysis sheets dated 10/19/01, 10/23/01, 10/24/01, and 10/30/01 in this attachment for all newly acquired gamma spectroscopy results

The HVAC system located in B881 was also isotopically characterized by the RFETS Measurements group Results of this evolution are reported in Section 3 2 of the RLCR Attachment E-13 contains the generated summary reports for B881

3.2 Radiological Hazards Summary

The RLC confirmed that the anticipated Type 2 facilities (B881, B881F, and B887) contain radiological contamination above the surface contamination guidelines provided in the RLCP Stacks 1, 2, and 3 did not contain radiological contamination in excess of these guidelines

The stainless steel flooring located in B881 was sampled at forty-five locations The stainless steel flooring was cut using a circular saw and radiological surveys were performed on the surface underneath Two locations (Room 199 & Room 114A) displayed elevated alpha activity In both scenarios, the elevated activity was attributed to uranium using the SAIC AP-2 or gamma spectrometry Only Room 114A exhibited alpha activity in excess of the RLCP uranium DCGL's AP-2 data (Room 199) is reported in Attachment E-4, and gamma spectroscopy results (Room 114A) are reported in Attachment E-12

Consent Order Rooms 114A, 127A and 15A were characterized as a part of this RLCR Rooms 114A and 15A exhibited elevated alpha activity All removable smears were analyzed using gamma spectroscopy, and results did not attribute this activity to transuranic contamination Both rooms contained total alpha activity in excess of RLCP uranium DCGL's Attachment E-12 contains the Canberra gamma spectroscopy results for both rooms

The interior of B881, Stack 2 also had radiological contamination in excess of RLCP transuranic guidelines A total of ten RSC and TSA measurements were completed on the interior of this stack, and all ten locations showed alpha activity in excess of RLCP transuranic DCGL's However, gamma spectroscopy did not indicate the presence of transuranics Therefore, the uranium limits may be appropriately applied Due to sample locations being limited in scope, verification isotopic sampling should be performed during PDS to verify gamma spectroscopy conclusions Gamma spectroscopy results are located in Attachment E-12 Radiological surveys conducted on the interiors of Stacks 1 and 3 did not indicate contamination Radiological data summaries for all associated B881 stacks are located in Attachment E-2

B881 Radiological Engineering has maintained a historical log of contamination events throughout the facility This historical log represents multiple contamination scenarios from air samples, equipment, and building surfaces of B881 AP-2 data was taken from RSC measurements, and in some scenarios, direct measurements of the contaminated items/surfaces themselves All AP-2 results indicated enriched or depleted uranium contamination only No transuranic contamination was ever detected from AP-2 measurements taken from the main building of B881 (75% of total area) B881 Annex (25% of total area) operations do have limited plutonium-handling history (i e , small Research & Development operations and a small repack operation) and were not included as a part of this table However, it is not suspected that the annex portion of B881 contains transuranic contamination, and no transuranic contamination has been discovered Further isotopic investigation may be required prior to PDS surveys The summary table is included in Attachment E-11 All supporting data is maintained in the B881 Characterization files

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The Holdup Measurement Team conducted measurements of the B881 HVAC system to determine the amount of holdup contained in this system and to define the isotopes of concern. Results of the hold up measurements showed 0 0 grams of Pu^{239} present and approximately 698 grams of U^{235} (enriched uranium). Preliminary Nuclear Safety analysis and the Holdup Team Report (HMT-01 307) indicate that the B881 holdup inventory levels are well below the Nuclear Hazards Category Level Three standards (< 8 4 grams of Pu^{239}, and, <1 9E6 grams of U^{235}) Therefore, B881 meets the Radiological Facility Nuclear Hazards category Supporting documentation (HMT-01 307) is maintained in the B881 Characterization files

None of the exterior survey areas had radiological contamination above the RLCP or PDSP DCGLs However, several methods of investigation (i e , square meter averaging & gamma spectroscopy) were required to verify all exterior surfaces met PDS guidelines

One survey location was taken in a known Fixed Contamination Area located on an interior surface of the exclusion dock on the east side of B881 This dock is still being used by the facility to ship waste from the building The indicated dock was not intended to be included in the exterior surfaces for the PDS effort Therefore, the dock will be remediated and re-surveyed during the interior PDS phase All applicable DCGLs and DQOs were met and no further investigation was required

Four exterior measurement values (survey locations 63, 67, 74, & 85) had initial elevated activities, and a nine-point mean investigation was performed An additional eight 90-second total surface activity measurements were performed within one square meter of each initial elevated measurement location The one square meter mean of each location was less than 100 dpm/100cm^2, with no single total surface activity measurement in excess of 300 dpm/100cm^2 The one square meter mean value for each location is reported in the 881-B-001 Data Summary in Attachment E-9 Refer to this attachment for results of the nine point investigations and mean calculations. All applicable DCGLs and DQOs were met and no further investigation is required

Due to an initial elevated measurement value at two other exterior survey locations (locations 45 & 68), Radiological Engineering completed an investigation utilizing gamma spectroscopy to identify isotopes of concern The Canberra ISOCS system was utilized to characterize B881 Cluster concrete foundations and corrugated, transite roofs with elevated alpha activities Gamma spectroscopy was performed on the concrete foundation located at Stack 2 (four gamma spec analyses) and the corrugated, transite roof of B887 (one analysis) Analyses results, using Americium 241 as a surrogate isotope for Pu-241, did not indicate transuranics as isotopes of concern (no weapons grade plutonium was present) Therefore, since there was no weapons grade plutonium was present, the uranium limits were appropriately applied to these areas All gamma spectrometry was conducted on locations that indicated elevated activity No single TSA measurement exceeded 5,000 dpm/100 cm^2 (Uranium $DCGL_W$ = 5,000 dpm/100 cm^2 average and $DCGL_{EMC}$ = 15,000 dpm/100 cm^2, maximum) All applicable DCGL's were met and no further investigation is required

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Since the exterior radiological surveys of the 881 Cluster anticipated Type 2 facilities were performed to the PDSP criteria, these surveys also satisfy PDS requirements for the exterior surfaces of these facilities If any future potentially contaminating event were to take place during D&D activities that could contaminate the exterior surfaces of these facilities, then these surfaces would be resurveyed prior to demolition As discussed above, all exterior 881 docks will be included with the interior surfaces during future PDS efforts

As a result of the data presented in this section, and subject to concurrence by the CDPHE, B881 Cluster Anticipated Type 2 facilities (i e , B881, B881F, B887, and Stacks 1, 2 and 3) are considered to be Type 2 facilities Low levels of contamination were found in B881, B881F, B887, and Stack 2 No contamination above DCGL values was found in Stacks 1 and 3 or exterior PDS surfaces In addition, the isotopes of concern for the main portion of B881 (excluding the B881 Annex) are depleted uranium and enriched uranium Although it is not believed that the B881 Annex possesses transuranic contamination, further investigation may be required prior to PDS surveys to determine the types of surveys required The caustic scrubber located in Room 114A and B881 HVAC system should require further isotopic investigation during in-process surveys to determine if transuranic isotopes are present The following Table 3 2 summarizes the rooms and surfaces where contamination was found above the RLCP surface contamination guidelines from all RLC data sources

Table 3.2 Radiological Data Summary
(X = Areas above RLCP Surface Contamination Guidelines, O = Areas below RLCP Surface Contamination Guidelines)

Room	Floors & Lower Walls	Upper Walls & Ceilings	Equipment
B881, Survey Area A	X	O	O
B881, Survey Area B	X	X	X
B881, Survey Area C	X	X	X
B881 Survey Area D	X	X	X
B881, Survey Area E	O	X	O
B881, Survey Area F	X	O	O
B881, Survey Area G	O	O	X
B881, Survey Area A-2	X	X	X
B881, Survey Area B-2	X	O	X
B881, Survey Area C-2	X	O	O
B881, Survey Area D-2	X	O	O
B881, Survey Area E-2	X	X	X
B881, Survey Area F-2	X	O	O
B881, Survey Area G-2	O	X	O
B881, Survey Area H-2	X	X	X
B881, Survey Area I-2	X	X	O
B881, Survey Area A-1	O	O	O
B881, Survey Area B-1	O	O	O
*** B881, Survey Area G	O	O	N/A
*** B881, Survey Area H	O	O	O
*** B881, Survey Area I	X	N/A	N/A
*** B881, Survey Area J	O	O	O
*** B881, Survey Area K	O	O	O
*** B881, Survey Area L	X	X	X*
*** B881 Survey Area M	O	O	X*
B881F Interior	O	O	X*
*** B881 Exterior	O **	O	N/A
*** B881F Exterior	O	O	N/A
*** B887 Exterior	O	O	N/A
*** S-1, S-2, S-3 Exteriors	O	O	N/A

* Systems and equipment are assumed to be internally contaminated
** B881 Exclusion Dock has a known Fixed Contamination Area, and will be remediated prior to PDS surveys conducted for B881 demolition
*** Newly acquired data areas

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4 CHEMICAL CHARACTERIZATION AND HAZARDS

The 881 Cluster was characterized for chemical hazards per the RLCP Section 4 1 describes the chemical characterization process, and Section 4 2 summarizes the (chemical) analytical results Potential contaminants of concern include asbestos, beryllium, RCRA/CERCLA constituents, and Polychlorinated Biphenyls (PCBs) Refer to Attachment F, Chemical Summary Data and Sample Maps, for details on sample results and sample locations

Building 881 has extensive piping to support the RCRA process waste system This system will be characterized and closed under the provisions of the RCRA permit for Unit 887 2 Building 881 also has one piece of idle equipment that requires characterization, the HF Scrubber Due to the accessibility issues, the HF Scrubber will be characterized during the in-process characterization efforts, however, the potential contaminates in the HF Scrubber will not affect facility typing

4.1 Chemical Characterization

Chemical characterization was performed to determine the nature and extent (if any) of chemical contamination that may be present on or within the anticipated Type 2, 881 Cluster facilities The decision to perform chemical sample collection at specific sites was determined based upon a review of historical and process knowledge, visual inspections, and RLCP DQOs Locations were considered for sample collection where there appeared to be reasonable cause for suspecting the presence of (RCRA/CERCLA/PCB) chemical contamination Beryllium samples were taken at random and biased locations

Chemical characterization packages (refer to Attachment D for asbestos, RCRA and PCBs and Attachment C for Beryllium) were developed during the RLC planning phase which describes sample type, the justification for sample locations, and the estimated number of samples to be collected per sample location and sample type Based on the HSAR, *no known areas* of hazardous chemical contamination were apparent However, the chemical characterization package included the stipulation that any free liquids, sludge, and/or suspicious staining identified during RLC activities would be sampled and analyzed for RCRA/CERCLA constituents and PCBs

4.1.1 Asbestos

After reviewing the historical data and conducting the RLC walk-downs and inspections in 881, 881F, 887, Stacks 1, 2, and 3, all building materials that presumably could contain asbestos in these structures will be treated as asbestos containing Because a thorough and complete asbestos inspection of the 881 Cluster would be time consuming and costly, no additional asbestos sampling was performed In July and August of 1994, a limited, asbestos baseline inspection was performed in the third floor mechanical room of 881 ("Baseline Asbestos Inventory, Building 881," CWS-029-94) Asbestos was present in the thermal systems insulation No comprehensive asbestos inspection of the other areas of 881 has been completed

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4.1.2 Beryllium (Be)

Extensive interior facility beryllium characterization data for 881 already existed from prior surveys performed by the Kaiser-Hill Occupational Safety and Industrial Hygiene (OS&IH) organization Therefore, only RLC data gaps were specified in the 881 Cluster Characterization Packages This RLCR summarizes existing OS&IH beryllium data (refer to Attachment F, Table F 1, Historical Beryllium Data Summary) and newly acquired RLC data (refer to Attachment F, Table F-2, Beryllium Sampling in Data Gaps in the 881 Cluster) For 887, Stacks 1, 2, and 3 there were not adequate existing data to satisfy RLC requirements Therefore, random and biased sampling was performed in each of these facilities

4.1.3 RCRA/CERCLA Constituents [including metals and volatile organic analyses (VOAs)]

Per the 881 Chemical Characterization Package (refer to Attachment D), any RCRA/CERCLA samples were to be analyzed for VOAs, semi-VOAs, and metals (including mercury) Sample points were identified for 6 floor locations, rooms 10B, 12(originally listed as 15), 113, 143, 160, and 168, and the 3 pits under the elevators The floor locations were selected based on staining and/or evidence of spills The location in room 12 was in the vicinity of the process waste line In room 10B there were known to be spills from the lead acid batteries The elevator pits were considered likely locations for unremediated spills

Sampling for lead in paint in the 881 Cluster was not required Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal

4.1.4 Polychlorinated Biphenyls (PCBs)

As indicated by the HSARs, there were no historical documentation or worker (interviewee) recollection pertaining to spill or release events involving PCBs (i e , oils) The HSARs indicate that based on the age of 881 Cluster Type 2 facilities, PCB paints, PCB-containing equipment, and/or PCB ballasts may be present However, with regard to PCB paint, it is assumed that painted demolition debris will either be disposed of as PCB Bulk Product Waste, or, if meeting the release criteria for all other constituents as noted in the Concrete RSOP, the concrete will be used as backfill onsite Therefore, painted concrete surfaces were not to be sampled for PCBs in paint during the RLC

Any idle equipment and hydraulic lines containing hydrocarbon fluids are to be analyzed for PCBs as they are encountered during in-process characterization Such equipment and lines containing PCBs above regulatory threshold concentrations will be dispositioned as Toxic Substance Control Act (TSCA) waste PCB ballasts that are present in B881 will be removed and disposed in accordance with site procedures prior to building demolition

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As with the RCRA/CERCLA constituents, the 881 Chemical Characterization Package stipulates that any free liquids, sludge, or suspicious staining identified during RLC activities would be sampled and analyzed for PCBs Seven locations were identified for sampling These were in rooms 113, 143, 160, 168 and the three elevator pits The floor locations had evidence of oil type spills and the elevator pits were likely areas for spills

4.2 Chemical Hazards Summary

The following sections summarize the chemical hazards identified during the RLC

4.2.1. Asbestos

In 881, 881F, 887, Stacks 1, 2, and 3 it is assumed that all building materials that could contain asbestos do, in fact, contain asbestos These building materials include, but are not limited to, the following thermal systems insulation (TSI), transite and gypsum wallboard, drywall joint compound, floor tile, linoleum and mastic adhesive, ceiling tiles, spray-on fireproofing, and tar-impregnated roofing Therefore, no additional asbestos sampling was performed See Attachment G for estimated friable and non-friable asbestos waste volumes

4.2.2. Beryllium

Extensive random and biased surface and air sampling for beryllium has been conducted in the 881 Cluster Buildings in the past few years The overall purpose of these surveys was to determine the ambient levels of beryllium in locations known to have processed beryllium In general, accessible surfaces were addressed Even so, the sampling data show that many areas in the Cluster are beryllium contaminated, refer to **bold** highlighted entries in Attachment F, Table F 1 Table F 1 was compiled by reviewing and consolidating approximately 500 pages of individual Industrial Hygiene survey data forms Refer to the 881 Characterization Project Files for individual Industrial Hygiene data results

In addition to the sample data collected for this RLCR, beryllium sample data were also obtained and reported in sampling efforts that took place in the 1994-1995 timeframe These sample data (Baseline Beryllium Survey, Building 881, L A Holwager, Safe Sites of Colorado, 9/11/95) are not reported in this RLCR, but are available for review in the 881 Cluster Characterization Project files The historical sample data results in this report corroborate the recently acquired sample data detailed in this RLCR

Attachment F, Table F 1 summarizes the historical beryllium data for rooms and surfaces where data existed prior to the RLC effort Newly acquired RLC beryllium sample data, and sample location maps, are contained in Attachment F, Table F 2

4.2.3. RCRA/CERCLA Constituents

The majority of the process areas in 881 have stainless steel covering the floors There was no actual documentation of unremediated spills, however nine locations were identified where samples were required Four of these were in the areas where machining was performed

Analytical results did not identify any areas where RCRA metals exceeded the regulatory limits There were several VOAs identified in the parts per billions (ppb) None of the VOAs exceeded the RCRA limits as a characteristic waste (40CFR261 24), however, two areas are assigned EPA codes as a listed waste (40CFR261 31) due to the presence of solvents

In areas where solvents were known, or suspected, to have been used any detection of a listed solvent resulted in the waste being assigned EPA codes as a listed waste Room 143A was assigned EPA codes F001, F002, F003, and F005 This area was known to have been used for machining and solvents were probably used This only applies to an area approximately 4 feet by 3 feet where there is evidence of staining This is expected to be no more than 2 inches deep The remainder of the floor would not be assigned any EPA codes Room 113 was assigned EPA code F003 due to the presence of xylene This applies to the areas where there is evidence of staining, 4 areas, 3 feet in diameter and 2 inches deep

In 10B xylene was also detected, however, this is the area where the UPS batteries were located and based on process knowledge solvents would not have been used to clean up a spill, therefore the F003 code does not apply After the analytical data is validated the characterization will be confirmed or corrected as needed RCRA/CERCLA sample data, sample location maps, and regulatory threshold concentrations are contained in Attachment F, Chemical Summary Data and Sample Maps, Tables F 3 and F 4

4.2.4 PCBs

Samples were taken in four locations where machining was performed and in the 3 elevator pits With the exception of three samples, two in room 143 and one in room 160, there were no PCBs detected The result for room 160 had Aroclor 1254 at 740 ppb and an estimated value for Aroclor 1221 of 240 ppb The result for room 143 had Aroclor 1254 at 510 and 460 ppb None of the areas exceed the regulatory limit PCB sample data and sample location maps are contained in Attachment F, Chemical Summary Data and Sample Maps, Table F 5

5 PHYSICAL HAZARDS

Physical hazards associated with the 881 Cluster facilities consist of those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices

Since Building 881 has been reconfigured and used for numerous operations, the dismantlement and decontamination activities will need to be sequenced to ensure that the activities account for systems and piping that go from one room to another and in some cases, from one floor to another A preliminary assessment of the required sequence has been developed and included in the RISS Project Management Plan This strategy will be refined as the work is planned and a subcontractor is selected

Since Building 881 is partially constructed in the hillside and a three-story concrete structure, the demolition of the facility will require additional consideration with respect to physical hazards For example, the demolition method evaluation will need to consider the soil loading on the walls and the need to lay back these soils A demolition specialist is being subcontracted to evaluate the demolition of the structure The demolition plan and health and safety evaluation for demolition will need to address the additional physical hazards that result from the facility's construction and location Although Building 881 does have some particular physical hazards due to its construction and history, the decommissioning complexity is consistent with a Type 2 designation

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of the 881 Cluster, and consequent waste management, are of adequate quality to support the decisions documented in this report The data presented in this report (Attachments A–G) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate

- the *numbe*r of samples and surveys,
- the *types* of samples and surveys,
- the sampling/survey process as implemented "in the field", and,
- the laboratory analytical process, relative to accuracy and precision considerations

Details of the DQA are provided in Attachment H

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The decommissioning, demolition and disposal of the 881 Cluster will generate a variety of wastes Attachment G presents the estimated waste types and waste volumes by facility There is radioactive, asbestos, beryllium waste and hazardous wastes Asbestos and PCB ballasts will be managed pursuant to Site asbestos and PCB abatement and waste management procedures

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8 FACILITY CLASSIFICATION AND CONCLUSIONS

The RLC of the 881 Cluster was performed in accordance with the DDCP and RLCP, all RLCP DQOs were met, and all data satisfied the RLCP DQA criteria The exteriors of these buildings were surveyed in accordance with PDSP requirements and meet the PDSP release limits Therefore, the exterior PDS surveys of these facilities are considered complete If any future potentially contaminating event were to take place during D&D activities that could contaminate the exterior surfaces of these facilities, then these surfaces shall be resurveyed prior to demolition Additionally, a confirmation smear survey shall be performed of the exterior surfaces prior to demolition To ensure that the facility exteriors remain free of contamination and that PDS data remain valid, facility exterior isolation controls have been established, and the facilities have been posted accordingly

Demolition of these facilities will generate radiological, asbestos and beryllium wastes Building 881, Rooms 143A and 113, indicated releases of solvents from mechanical equipment operations Portions of Room 143A and 113 floor slabs will be managed for disposal as RCRA Listed Hazardous Waste PCB ballasts and asbestos containing material will be removed and disposed of in compliance with EPA and CDPHE regulations Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

Based on the analysis of radiological, chemical and physical hazards, the anticipated Type 2 881 Cluster facilities (i e , 881, 881F, 887, and Stacks 1, 2 and 3) are classified as RFCA Type 2 facilities pursuant to the RFETS Decommissioning Program Plan (DPP, K-H, 1999) The Type 2 classification is based on a review of historical and process knowledge, previously acquired and newly acquired RLC data

The Type 2 classification is also based on the relative complexity associated with decommissioning the facilities The facilities will not require unique or non-standard techniques for decontamination, dismantlement or demolition Although the actual square footage of Building 881 is large (over 245,000 square feet) and the history of operations diverse, the radiological, chemical and physical hazards are not significant (e g , no evidence of transuranic contamination) or overly intermingled and can be controlled through standard means

There have been some indications that potentially contaminated groundwater, could impact the building during decommissioning Groundwater will be managed with the existing building systems to ensure that the water is diverted from the building area during decommissioning (i e , foundation and footing drains will be removed just prior to backfilling the area after the appropriate remediation and demolition are complete) The typing requires concurrence by the Colorado Department of Public Health and the Environment (CDPHE)

9 REFERENCES

ANSI-N323A-1997, *Radiation Protection Instrumentation Test and Calibration*

DOE/RFFO, CDPHE, EPA, 1996 *Rocky Flats Cleanup Agreement* (RFCA), July 19, 1996

DOE Order 414 1A, *Quality Assurance*

EPA, 1994 *The Data Quality Objective Process*, EPA QA/G-4

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev 0, November, 2000

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev 1, September 1999

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev 3, April 23, 2001

K-H, 1999, *Decommissioning Program Plan*, June 21, 1999

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D of Facilites*, Rev 0, April 23, 2001

MARSSIM, *Multi-Agency Radiation Survey and Site Investigation Manual*, December 1997 (NUREG-1575, EPA 402-R-97-016)

PRO-475-RSP-16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev 1, May 22, 2001

PRO-476-RSP-16 02, *Radiological Surveys of Surfaces and Structures*, Rev 1, May 22, 20001

PRO-477-RSP-16 03, *Radiological Samples of Building Media*, Rev 1, May 22, 2001

PRO-478-RSP-16 04, *Radiological Survey/Sample Data Analysis*, Rev 1, May 22, 2001

PRO-479-RSP-16 05, *Radiological Survey/Sample Quality* Control, Rev 1, May 22, 2001

RFETS, *Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*

RFETS, Historical Site Assessment Report for 881 Cluster

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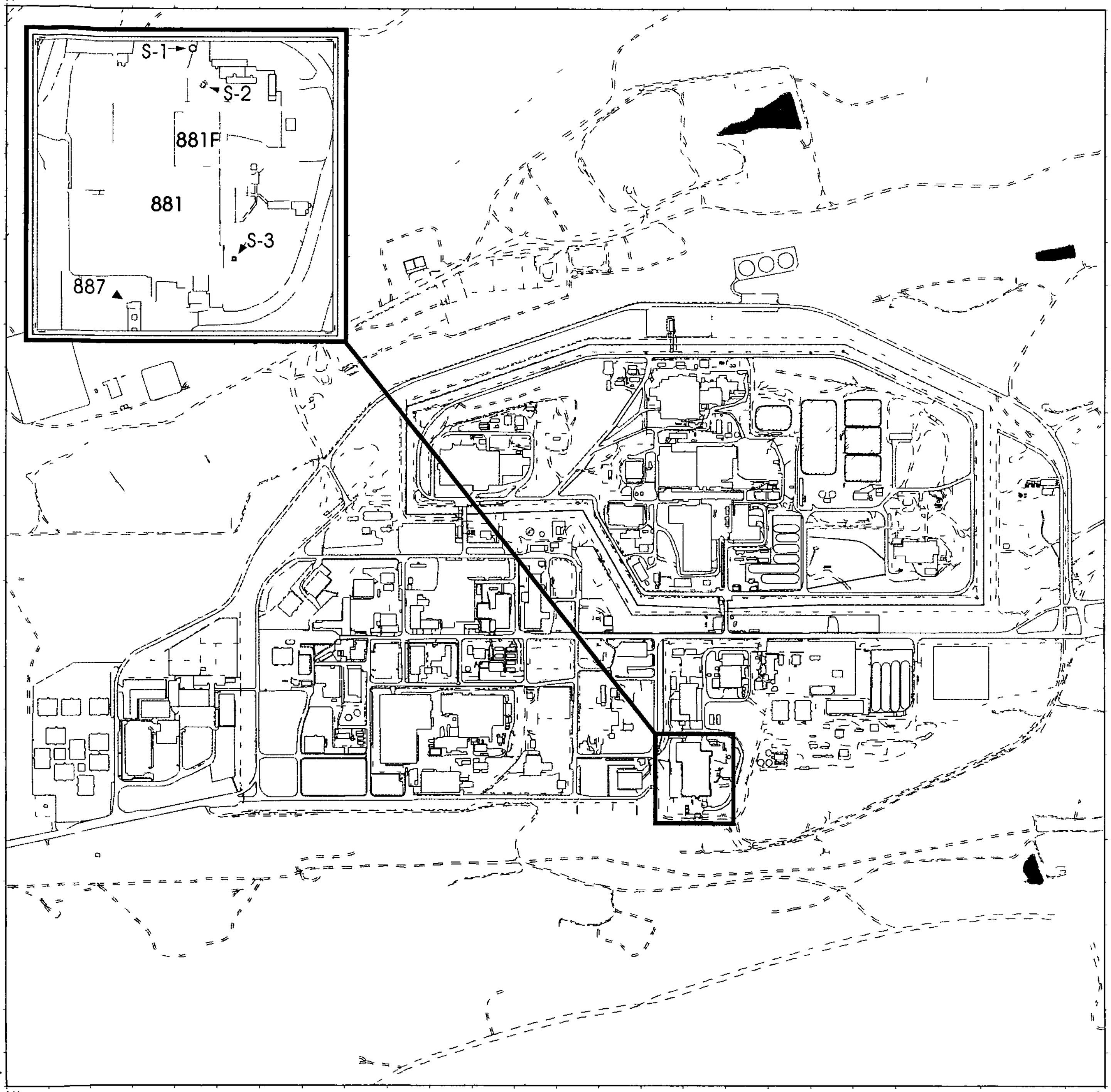
ATTACHMENT A

Facility Location Map

881 Building Cluster



EXPLANATION

881 881F & 887 buildings
S 1 S 2 & S 3

Standard Map Features

Buildings and other structures

Solar Evaporation Ponds (SEPs)

Lakes and ponds

Streams ditches or other drainage features

Fences and other barriers

Paved roads

Dirt roads

DATA SOURCE BASE FEATURES
Buildings fences, hydrography roads and other structures from 1994 aerial fly over data captured by EG&G RSL Las Vegas
Digitized from the orthophotographs. 1/95

N

Scale = 1 12450
1 inch represents approximately 1038 feet
250 0 500 1000 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum. NAD27

U S Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept. 303-966-7707

Prepared by
DynCorp
THE ART OF TECHNOLOGY

Prepared for
KAISER HILL

MAP ID FY 2002

October 16 2001

NT_Svr w /projects/fy2002/02 0032/881 cdr

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ATTACHMENT B

Historical Site Assessment Report

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BUILDING 881 CLUSTER

HISTORICAL SITE ASSESSMENT (HSA)

JULY 2001

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TABLE OF CONTENT

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1.0 INTRODUCTION

This Historical Site Assessment (HSA) is intended to provide a summary of the historical operations, building descriptions, as well as an overview of facility contamination history Much of the Building 881 process history and the physical descriptions were obtained from the Building 881 Historical Release Report (EG&G, 1994), the Draft Safety Analysis Report (EG&G, 1982), and the Facility Safety Analysis (RMRS, 1998) Other sources of information were the Building WISRIC, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases, as well as personnel interviews

The individual Subject Matter Experts (SMEs) should evaluate/verify the information during the RLC/PDS process The SMEs may need to review additional documents and perform additional interviews

This HSA was performed prior to SME walkdowns, and chemical and radiological characterization package preparations Information contained in this HSA only represents a "snapshot" in time Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report However, this report will not be amended, and the newer data will take precedence over the data in the report Newer Data will appear in the RLCR/PDSR

Building 881, known as the Manufacturing and General Support Building, is a two-story structure with a basement The building has two mezzanines, one on the first-story and another on the second-story The second-story mezzanine is also referred to as the third floor The building has no windows since most of the structure was built below grade The building was originally constructed in 1953 and contains approximately 250,000 square-feet of floor space

Building 881 was primarily a uranium production and stainless steel fabrication facility

- The basement housed the old boiler equipment (most of which has been removed), process cooling water tanks, electrical equipment and ventilation ducts

- Administrative functions such as payroll, accounting and computer operations currently occupy the southwest section of the first floor Analytical laboratories, maintenance shops and offices are located in the southeast section The center of the first floor housed the waste recovery operations with the caustic scrubber extending through to the second floor mezzanine The northern section of the first floor housed utilities systems, maintenance, and the old building ventilation system

- The first floor mezzanine contained engineering offices and maintenance storage

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- The northwest section of the second floor housed utilities, maintenance, the casting furnaces, and the production machine shop The northeast section contained building ventilation and utility systems, production areas and various analytical laboratories Analytical laboratories, maintenance shops and offices were also located in the southeast section The southeast corner of the second floor housed the cafeteria The western section of the building housed the laundry, research and support laboratories and offices The eastern side of the second floor housed most of the production-related operations

- The north section of the second floor mezzanine contained exhaust plenums and control systems The west section contained offices and a brazing laboratory The south section contained a fan room and supply air filter banks

- An underground tunnel connects the northwest corner of Building 881 to the southwest basement corner of Building 883 A physical description of the tunnel can be found in Section 12 The tunnel was originally used to transport enriched uranium parts and other material between the two buildings

Two major modifications to Building 881 were performed The first modification included an annex and a radiography vault built in 1956 The annex included a two-story "L" shaped addition around the northwest corner of the original structure and included an exhaust stack, additional uranium processing rooms and the tunnel to Building 883 This addition also included two radiography vaults located on the second floor of the north east corner of the original structure and used X-ray equipment to determine the absence or presence of cracks, voids, and gaps in parts

The second modification was a high-pressure vault, built in 1967, on the second floor near the center of the east side of the original structure The high-pressure vault contained high-pressure hydraulic equipment for manipulating parts

The support buildings, and there anticipated facility type to be included in the Building 881 Cluster are

Building 881C - Building 881 Cooling Tower – Anticipated Type 1

Building 881F - Building 881 Filter Plenum – Anticipated Type 2

Building 881G - Emergency Generator Building – Anticipated Type 1

Building 881H- Electrical Equipment Building – Anticipated Type 1

881 Tunnel - Tunnel between Building 881 and Building 883 – Anticipated Type 1

Building 887 – Sewage and Process Waste Building – Anticipated Type 2

Building 890 – Old Cooling Tower Pump House– Anticipated Type 1

Building 890 pad – Pad remaining from the old Building 881 Cooling Tower– Anticipated Type 1

Stack S1- Stack North of 881– Anticipated Type 2

Stack S2 – Stack Northeast of 881– Anticipated Type 2

Stack S3 – Southeast of 881– Anticipated Type 2

The supporting exterior tanks associated with the Building 881 Cluster are

TK66 – Diesel Storage Tank (replaced Tank 002) – Anticipated Type 1

Tank 002 – Steel Fuel Tank east of 881G – Anticipated Type 1

Tank 029 – Helium Storage Tank East of 881– Anticipated Type 1

The Building 881 support facilities and support tanks are be discussed in more detail below

2.0 PHYSICAL DESCRIPTION OF BUILDING 881

2.1 General Construction and Foundation

Building 881 is constructed primarily of reinforced concrete There are a few interior walls of concrete block, gypsum board and transite board over steel studs The construction details of Building 881 and the associated support structures are discussed in later sections

The primary structural framing of the building is poured-in-place reinforced concrete columns and beams Structural steel beam framing was used at two locations, in the center stairway and in the roof of the Building 881 Annex

The main foundations of the building are individual spread footings of concrete for the interior columns and continuous footings of concrete for the exterior walls The spread footings have a maximum size of 11-feet square by 2-1/2-feet thick, and the minimum size of 4-feet square by 1-foot thick The continuous footings vary from 10 to 16-inches thick

2.2 Walls

All exterior walls of the building are reinforced concrete The wall thickness varies from 8-inches to 16-inches thick

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The interior walls of the building are made of several types of materials The elevator shaft, stairwells, and some of the rooms are constructed of reinforced concrete walls from 8 to 12-inches thick Many interior walls are constructed of concrete block from 4 to 8-inches thick Some walls are constructed of metal studs covered with gypsum board Transite wallboard is suspected of being used in some walls

Poured concrete walls and concrete block walls are frequently painted, and metal partitions have factory finishes Restroom walls have glazed tile wainscoting

2.3 Floors

The concrete slabs on grade vary in thickness from 6-inches to 12-inches thick with wire mesh reinforcement The first floor is constructed of reinforced concrete slabs, 6-inches thick, supported by concrete beams The second floor concrete slabs are of two designs, flat slabs and beam slabs The second floor and mezzanines are constructed of 6-inch and 8-inch thick slabs The Room 199 pit landings have metal floors of 3/8-inch thick steel plate

The floors in most of the process areas were surfaced with stainless steel sheeting with welded seams to contain spills and facilitate decontamination

The floor finish of most offices, restrooms, and hallways are either asphalt tile or asbestos tile A few rooms have carpeting Floors of concrete are finished either with liquid floor hardeners or abrasive grit Floors of stainless steel sheet are without any finish and are grounded to the building grounding system

2.4 Ceilings

Most of the ceilings in the building are constructed of concrete slabs Some concrete slab ceilings are plastered There are also a few ceiling of steel plate and acoustical tile

Concrete ceilings have either natural or painted finishes Metal ceilings are generally factory-finished, but a few are painted Plastered ceilings are painted

2.5 Roof

The original Building 881 has 1-inch thick insulation covered with built-up roofing on top of a concrete roof slab The concrete roof slabs vary between 12-inches and 16-inches thick

The Building 881 annex has metal decking on structural steel framing, with 1-1/2-inch thick insulation and built-up roofing

2.6 Doors

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Hollow metal doors are used for the swinging and sliding doors in the building Some metal doors have louver panels, and some have glass panels There are steel roll-up doors and doors with wire mesh panels

All exit doors have panic-bar door latches There are three vault doors with a 2-hour fire rating, and there are some hollow metal doors lined with lead All hallways and outside exit doors are 2-hour fire rated

3.0 UTILITIES

3.1 Argon

Argon was used in Building 881 and was supplied by an above ground argon tank located at the northwest corner of the building This system is currently deactivated, and the argon tank has been removed Argon was primarily piped to the laboratories and the process areas

3.2 Breathing Air

Building 881 had a breathing air system that supplied breathing-quality air for supplied-air work This system is currently deactivated The system used a portable breathing air compressor to provide breathing quality air to the building when needed The portable compressor was connected to the breathing air system outside the north east corner of the building The building has recently installed a breathing air system to be used for training

3.3 Cooling Water Supply

Four exterior water-spray cooling towers provide process cooling water to Building 881 CT-1 and CT-2, located on the south exterior, are used primarily for cooling associated with the Central Computing Facility These towers interface with cooling water circulating pumps in Rooms 10 and 302 CT-3, located east of the building near Column Line 10, provides cooling water to re-circulating pumps in Room 121 CT-4, located on the north exterior of Building 881 near Column Line D, provides cooling water to the Building 881 air conditioning system (refer to section 5 for more detail) CT-4 also serves Building 883 The cooling towers interface with the raw water, sanitary sewer, and electrical systems The cooling medium used in the closed loop systems is a 40/60 ethylene glycol/water mixture The make-up water for the cooling tower is supplied from a raw water line north of Building 881

3.4 Compressed Air

Compressed air (90 psi) was provided to Building 881 shops and laboratories via steel lines from compressors in Room 121 Instrument air (40 psi) was also provided from Room 121 A 3/4-inch line from Building 881 was used to supply compressed air to Building 885 and Building 887 Building 881 compressed air systems is still used to control the ventilation dampers

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3.5 Fire Suppression System

Sprinklers are installed throughout the building and are fed from the domestic cold water lines with back-flow preventers The Building 881F HEPA filter plenum is equipped with an automatic water deluge system

3.6 Natural Gas

Natural gas is supplied to Building 881 by a 2-inch aboveground gas line that is routed along the west exterior of the building The gas line enters the building at the southeast corner and is routed to various chemical hoods via steel pipes

3 7 Nitrogen

Nitrogen was used in Building 881 and was supplied by a nitrogen tank located at the northwest corner of the building This system is currently deactivated and the nitrogen tank has been removed Nitrogen was primarily piped to the laboratories and the process areas

3.8 Process Waste System

Liquid wastes from various process systems and the analytical laboratory sinks are transferred to Building 887 via stainless steel lines Process waste from the Building 887 tanks are pumped to Building 374 via a stainless steel line with some section of the process waste system being a plastic wrapped with fiberglass material Wastes were appropriately sampled prior to transfer The process waste line from building 881 to Building 887 is suspected of having leaked

3.9 Sanitary Sewer

Sanitary sewer lines throughout Building 881 are routed to the sewage deep well, adjacent to Building 887, where sewage is then pumped to the plant treatment system Overflow and blow-down from the Building 881 cooling towers are handled by the sanitary sewer system

3 10 Steam System

Steam for heating Building 881 is provided from the plant steam system There is a 1-inch underground supply and ¾-inch underground return line from Building 881 to Building 885 Distribution within Building 881 is described in more detail in Section 6 0

3.11 Storm Drains

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Surface storm drains, around Building 881, route water away from the building Building footing drains route water to the out-fall on the hillside south of Building 881 Roof drains are also routed to the out-fall on the hillside south of Building 881

3.12 Water

Several fire hydrants in the vicinity of Building 881 are supplied by the raw water line located north of Building 881 Domestic cold water is provided by the plant system

4.0 ELECTRICAL

Building 881H houses various disconnect switches, switchgears, breakers, and distribution panels needed to supply power to Building 881 Power from Building 881H is brought into the building via a pipe chase (formerly Room 281) and distributed via conduits Past upgrades removed all polychlorinated biphenyl (PCB) cooled equipment or PCB-contaminated electrical equipment

Two generators (1,400 kW and 400-kW), located in Building 881G, provide backup power Located in Building 881G is an uninterrupted power supply (UPS) for the Central Computing Facility in Room 10, and another UPS for the utility control center in the north end of hall 15 in the basement All power is monitored and controlled from the utility control center

A 2400-volt line from Building 881 that runs along the south edge of 81 Drive provides power to Building 885 and Building 887

5 0 HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

To minimize the release of radioactivity, all uranium manufacturing and laboratory operations were vented through the original air plenum, equipped with HEPA filtration A new exhaust air filter plenum with two stages of HEPA filters was constructed on the roof of Building 881and began operation in 1991, replacing the original plenum system

The Building 881 HVAC serves both human comfort and hazardous material confinement functions The system is a once-through system with intake plenums on the south side of the building on the third level and on the north side of the building on the third level Air entering the inlet plenums is heated using plant steam or cooled using evaporative coolers The inlets have filters to remove airborne particulates from the outside air The conditioned air is routed throughout the building via ducts and ceiling plenums

Most of the air is exhausted, via four belt-driven 150-hp fans, through the Building 881F HEPA filter plenum Appropriate differential pressure can be maintained with only two exhaust fans Room 233 is exhausted by small (less than 5 hp) dedicated exhaust fans Rooms 131, 137A, 127, 145 and 147, and portions of the Central Computing Facility have dedicated air conditioning systems

Some of the room air is exhausted via chemical hoods to ensure hazardous fumes or vapors are appropriately diverted from occupied rooms There are a total of 90 chemical hoods in the building 61 hoods are located in the analytical laboratory areas, and 9 hoods handle acid fumes and are equipped with caustic scrubbers All hoods are connected to a booster fan located in the basement to ensure that an appropriate hood-face velocity is maintained Hoods are designed to maintain constant velocity laminar flow regardless of window position and some are equipped with integral chemical storage cabinets in the bottom, through which the hood air is drawn Hoods are routinely inspected for appropriate operation There are also three gloveboxes in the building Similar measures are taken to ensure confinement integrity of the gloveboxes

Building 830, 881F, 881G, 881H, 885, 887 and 890 do not have air conditioning systems Roof vents provide ventilation for these buildings

6.0 BUILDING 881 OPERATIONAL HISTORY

6 1 Historical Processes

Building 881 operations can be divided into three categories representing three distinct primary functions for the building

- Enriched uranium manufacturing and recovery which occurred between 1953 and 1966,
- Stainless steel operations which took place between 1966 and 1984 and,
- Recent activities that have taken place in the building since manufacturing operations were phased out Recent activities include plant wide administrative, computer and analytical support

6 1.1 Enriched Uranium Operations

Starting in 1953, Building 881 housed the plant's only enriched uranium components manufacturing and recovery operations Along with the primary casting, machining and chemical recovery operations,

The primary operations were divided into three areas

- Fabrication support, which included the foundry (for casting of shapes and ingots), machining and inspection
- Metal product support, which included recovery of relatively pure materials
- Salvage support, which handled recovery of solutions and solid residues with relatively low uranium content

In 1964, enriched uranium operations began phasing out of Building 881 when DOE adopted a single mission policy and decided to consolidate enriched uranium activities at Oak Ridge In 1965, DOE announced that all enriched uranium work would be transferred to Oak Ridge By 1966, most of the operations had ceased, the salvage and recovery processes being the last processes to be shut down

The detailed processes involved in the manufacturing and recovery operations as well as some of the ancillary activities are discussed in the following subsections

6 1.2 Casting

For the first few months of production, Oak Ridge sent uranium castings that went directly to the machining operations to be shaped The first raw material used in production came from Oak Ridge in the form of hockey puck-sized "buttons" of pure metal Smaller quantities of other forms of uranium such as uranyl nitrate and alloy scraps were also provided RFP-produced uranium buttons were soon added to the feed material once recovery operations were fully established in Building 881

Casting operations began with two furnaces located in Room 242, but as production increased four additional furnaces were added in Room 294 and 295 Crucibles used in the casting process were made from magnesium oxide until about 1958 when the building switched to using graphite crucibles supplied by the Building 444 carbon shop These graphite crucibles could be reused approximately 25 times prior to disposal To start the casting process, uranium metal was placed in a crucible and then heated in one of the six bottom- pouring induction furnaces Molten uranium was then poured into graphite molds to produce the desired shape

To support production of the original weapon concept, uranium was cast into spherical shapes that were sent directly to machining When the weapon concept changed to using hollow components in 1957, the pieces were cast into slabs or ingots, which could then be fabricated (rolled formed and machined) into the precise shapes required Many of these additional machining operations, including rolling, forming and computer controlled turning, took place in two newly constructed areas, Building 883 or the 881 annex No chemicals were known to be used in the foundry operations

6.1.3 Fabrication

Fabrication operations were housed in Rooms 245 through 247 and were performed in the open rather than in enclosed gloveboxes like the plutonium operations Between 1952 and 1957, milling machines and lathes were used to shape the first weapon design In 1957, tape-controlled turning machines were added to provide additional precision work for the hollow component design Machining was conducted with Shell Vitrea Oil as a coolant that was circulated by a centralized system operated in Room 304 Some waste oil was burned, and some was drummed, sent to the mound area and later moved to the 903 Pad drum storage area

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After machining, the parts were cleaned by dipping them into tanks containing PCE and allowing them to drip-dry Each machine had a dedicated dip tank that was changed out when impurities warranted

6.1 4 Inspection and Testing

After cleaning, the parts were sent to inspection and testing located in the northeast corner of the building Non-destructive testing using radiography was performed in Room 255, Room 248 A&A, 248 A&B and was eventually expanded to parts of Room 276

6.1.5 Enriched Uranium Recovery

The uranium recovery operations in building 881 began approximately two to three months after primary fabrication operations began Several different recovery process operations were employed depending on the type of starting material Most recovery processes involved operations to dissolve the uranium from the various residues and to convert the uranium from liquid to a solid oxide and then to a metal

Uranium recovery involved "fast" and "slow" processes The slow process handled relatively impure materials with low concentrations of enriched uranium by placing them through nitric acid leaching followed by solvent extraction Fast recycle used conversion and reduction steps to produce a pure uranium button The fast recycle process also handled materials that were relatively pure, including uranyl nitrate Recovery of these materials involved some of the same steps as the slow side, except the solvent extraction step was skipped The specific processes involved in recovery are discussed in detail below

6.1.6 Fast Side Recovery Of Relatively Pure Materials

Materials such as chips from machining operations and black skull oxide that accumulated in the foundry crucibles contained a high percentage of enriched uranium that could be processed relatively simply back into a pure uranium button Some of the important processing steps are described in the following text

- Oxidation and Dissolution Chips and skull oxide were burned to form a uranium oxide (U_3O_8) and then transferred to Room 257 for dissolution in small batches of concentrated nitric acid Room 257 housed three rows of controlled hoods 'known as "B-Boxes" The B-Boxes operated with high air velocities at the opening to ensure that vapors were contained in the hood

- Precipitation and Calcination The uranyl nitrate solutions resulting from nitric acid dissolution where filtered into a 4-liter Erenmeyer flask A 30 percent solution of hydrogen peroxide and malonic and citric acid were added to form a uranium peroxide precipitate (UO_4-$2H_2O$) The precipitate was referred to as "yellow cake"

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because of its characteristic color The yellow cake was then filtered and the liquid filtrate was returned to dissolution The filter cake was placed into a boat-shaped container and heated in a muffle furnace to produce orange uranium oxide (UO_3) The dissolution, precipitation and calcination processes which were originally performed as batch operations were changed to continuous operations as these were developed in the late 1950s and early 1960s

- Conversion and Reduction. The orange oxide from the calcination step was transferred to

- Room 266 for conversion to uranium tetrafluoride, or green salt The orange oxide was placed into Monel (Copper-Nickel alloy) boats and heated for two hours in a tube furnace to convert the UO_3 to UO_2 Anhydrous hydrogen fluoride was then added under constant temperature conditions which converted the oxide to the green salt

- Final Reduction The green salt was transferred to Room 264 for the final reduction to uranium metal that was performed in a sealed metal bomb reactor The uranium tetrafluoride was homogenized in a blender and placed into a magnesium oxide ceramic liner in the reactor with elemental iodine and calcium The reactor lid was sealed and the reactor was purged with argon gas and then heated While molten, the metal separated from the calcium metal and fluoride/calcium iodide slag and collected at the bottom of the reactor Building 881 operations began with production of buttons approximately 3 kilograms in size, but process improvements were able to produce buttons up to 15 kilograms in size in later years

  Off-gas from the reduction went through a potassium hydroxide scrubber and then through the building's main sodium hydroxide scrubber that handled off-gas from all of the chemical operations

6.1.7 Slow Side Recovery of Impure Residues

Impure materials such as slag, sand and crucibles from the foundry operations and residues from the incinerator were handled through a series of operations designated as slow side recovery or salvage operations

- Dissolution The impure materials to be recovered were crushed into pea-sized feed in a rod mill located in the southwest corner of Room 235 The crushed feed was placed into one of six 300-gallon or three 30-gallon steam-jacketed dissolving tanks Concentrated nitric acid was metered into the tanks that were heated to promote dissolution The resulting solution was then filtered through a plate and frame press with the filter mud being recycled to dissolution and the liquid going on to solvent extraction One kilogram of residue material produced approximately 7 5 liters of solution

- Solvent Extraction The low-concentration solutions from dissolution filtration operations were concentrated through use of two large solvent extraction pulse

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columns operated in sequence The columns were three stories tall and originated in the pit located in the Building 881 basement The uranium containing nitrate solution was adjusted to a specific gravity of 1 38 through addition of nitrate salts and fed into the top of the column Dibutylcarbitol (a high molecular weight with a specific gravity of 0 9) was pulsed into the bottom The aqueous phase, from which the uranium was extracted, referred to as primary raffinate, was left with less than 1 part per million uranium Originally this waste was solidified in concrete, but as production and volume increased it was sent to the Solar Evaporation Ponds

The primary column extraction produced a solution with a uranium concentration of about 5 to 10 grams/liter This solution was sent to one of 12 Eastman Kodak (EK) evaporators to be concentrated to 20-30 grams/liter The uranium solution was then pumped into the bottom of the secondary carbitol extraction column where high purity solutions containing 90-grams/liter uranium were produced This solution was then sent to be precipitated with hydrogen peroxide and further processed

6.1.8 Incineration of Combustible Residues

Six 3-foot diameter incinerators operated in Room 233 for the disposal and recovery of combustible waste produced during operation Material handled in the incinerators included kimwipes and cheesecloth used to wipe up drips and minor spills wood, cardboard and some air filters Material to be burned was placed inside a stainless steel wire mesh basket that fit into the cavity, leaving a two-inch air space between it and the wall The fine white ash residual was then sent to the slow side recovery process The off gas went to a slightly basic water scrubber followed by a caustic scrubber The exhaust was then sent through the main building plenum

6.1.9 Recovery of Site Returns

Starting some time after 1960, Building 881 housed chemical recovery operations for returned or rejected enriched uranium weapon parts In what was referred to as the oralloy leaching or OY leach process, uranium parts to be recycled were first subjected to a hot nitric acid spray to remove residual surface plutonium contamination Some amount of uranium was also removed by this acid leaching Acid solutions generated were collected and evaporated The concentrate was then precipitated with ammonia gas, calcified to a dry oxide and analyzed for plutonium Oxides were sent to Building 771 for recovery of plutonium After leaching, the decontaminated uranium parts were broken up in a press in preparation for further salvage The uranium leaching process was originally located in Room 266 and then moved to Room 257 OY leaching was moved from Building 881 sometime between 1973 to 1975 Recovery processes may have continued using nitric acid to leach beryllium from aluminum hemishells

6.1.10 Briquetting

Starting in about 1956, some of the relatively pure uranium scraps from machining were cleaned with TCE and PCE, pressed into briquettes and reintroduced into the casting furnace without further processing The briquetting press was located in room 242

6.1.11 Recovery of Uranium Fines from the Oil Coolant System

During the semi-annual inventories, coolant was drained from the machining operation system The lines were pumped full of nitric acid to dissolve kilogram amounts of uranium fines that accumulated This solution was then sent to recovery in the solvent extraction columns The coolant lines were reconditioned by pumping PCE through the lines Coolant system filters were also periodically sent to slow side recovery for recovery of uranium fines by burning the filters in the incinerators and processing the ash

6.1.12 Special Projects and R & D Projects

Building 881 was involved in numerous special projects and R&D projects It is important to note that the operations discussed below may not represent all activities, but only those which information was documented and available

- Tracer Components Some radionuclide tracers consisting of neptunium, curium, and cerium were used in Building 881 Also, some of the first neptunium processing occurred in Building 881 The tracers were blended with standard component materials so that the uniformity of the weapon components could be evaluated based on the distribution of the tracers Thorium-containing components were manufactured as a short duration project that occurred in the late 1950s to early 1960s Most of the thorium was returned to Savannah River or Oak Ridge for recovery

  Every effort was made to keep the tracer material separate from the regular production material in Building 881 Special operations were established to recover these constituents or they were sent off-site (to other DOE facilities) for recovery Room 152 was often used for dissolution and preliminary recovery of small quantity or specialized waste streams

  Another material which was handled in Building 881 in the mid-1960s was curium-244 Curium-244 is an alpha emitter with a high specific activity, relatively short half-life, and a relatively high rate of spontaneous fission Three grams of this material were converted from oxide into curium metal in a glovebox operation More details on this operation are contained in report RFP-811 "Glove Box Handling of Gram-Quantities of Curium-244 at Rocky Flats "

- Uranium-233 Processing In the mid-1960s, approximately 20 kilograms of uranium-233 were handled in Building 881 for two distinct projects Uranium-233 is a fissionable material that contains some fraction of uranium-232, a short half-life isotope with energetic gamma-radiating daughter products, including thorium-228 The material used in Building 881 was received from Oak Ridge and contained

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approximately 40 parts per million of uranium-232 Naturally occurring thorium was used as a carrier to carry down unwanted thorium-228 in what was called a thorium strike The material was reduced to a metal before fabrication work was performed The thorium strike was performed in Building 771 after which the material was transferred to Building 881 for further processing The material was cast in the G casting furnace in Building 881 and machined in a lathe that was isolated from the rest of the oil cooling system The operations involving uranium-233 were carefully controlled to reduce the probability of radiation exposure to workers

- Lithium Fabrication Some special order work involved lithium metal with a total of about 10 to 15 kilograms being handled The lithium was usually pressed and machined in Building 777, but was handled in Building 881 in approximately 1966 The material was malleable like lead and did not need to be cast in the foundry

- Recovery of Fuel Rods A special recovery project involved dissolving rejected beryllium-coated uranium fuel rods Several thousand rods were handled

- Distillation Solvent stills designed to recycle spent solvents, oils and mixtures of the two were also operated in Building 881 from about 1958 to 1962 The "heels" of the stills were scrubbed with nitric acid to reclaim the uranium and then were discarded Only about 10 percent of the distilled solvent were accepted for reuse In addition, a mercury recovery still was operated in Building 881 for non-plutonium contaminated mercury which was generated from vacuum pumps

- Cadmium Plating of Uranium Parts Room 253 housed an operation to coat enriched uranium artillery pieces with cadmium The pieces were then machined in Room 253

- Inertial Fusion Building 881 was involved in "inertial fusion" activities to machine specialty micro-parts for weapons and energy generation research There were four operational components to the inertial fusion project as follows (1) machining of small parts for subsequent gold plating, (2) gold plating, (3) assembly of microscopic parts, and (4) some large machining operations This operation took place in Rooms 283 and 143 and was discontinued in December 1993 Small quantities of encapsulated tritium were contained in the components machined as part of this project Chemicals such as lubricating oil, Freon 12, Freon 113, ethyl alcohol, epoxy glues and cutting fluids were used in the process

- Tantalum Special Order Work The brew furnace in Building 881 was used for brazing and heat tracing the tantalum special order components that were produced in Building 865

- Special Weapons Project Group The Special Weapons Projects Group developed engineering prototypes and full-scale models for military training Three-dimensional cutaway models were produced to display the internal workings or determine dimensions of various devises manufactured at RFP A dedicated machine shop

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fabricated the materials and used materials such as lubricants, cutting oils, and epoxy This process was deleted in January, 1 994

- Corrosion Testing The materials and surface technology group operated a corrosion-testing laboratory in Rooms 265, 267 and 282 The group conducted chemical and mechanical tests on raw and finished parts for compatibility with chemicals It was an R&D process that conducts non-routine tests on a variety of materials and therefore produced highly variable and intermittent waste streams A variety of solvents, acids, brine, oil and other chemicals can be used Aqueous wastes were washed down the process drain and solid wastes were drummed and disposed of as hazardous or non-hazardous waste depending on content

- Instrumentation and Special Projects The Instrumentation and Special Projects Group (ISP) was one of thirteen groups in the Technology Department The primary functions of the ISP, which was housed in Rooms 233 and 245, include evaluation and implementation of physical and real-time chemical analysis instrumentation, development of other automated equipment, and process simulation and control system development The ISP used various instrumentation and a physical and chemical laboratory Chemicals typically used include common lab reagents, trichloroethane, calcium fluoride, and carbon tetrachloride After neutralization, aqueous wastes are washed down the process drain

- Polymer Solidification Development Room 296 housed the research effort on processes to encapsulate surrogate waste forms in thermoplastic thermosetting polymers Hazardous samples from this project were drummed and sent to satellite collection areas

- Wastewater Treatability Studies The Waste Chemistry Group performed wastewater treatability tests in Rooms 264 and 299 to test the ability of processes to precipitate low-level transuranic compounds Acids and bases were used to adjust pH, and various oxidizing and reducing agents and precipitants were used in the treatment Non-hazardous waste was placed in low-level waste drums and process water was discharge to the process drain

6.1.13 Support Operations

The main support functions related to uranium operations involved laboratories that were located on the first floor, primarily in Rooms, 101, 104, 110, 137, and 227 Room 101 was wet chemistry lab, Room 110 and 104 was the general lab, Room 137 was used for emissions spectroscopy, and Room 227 was the standards lab It is important to note that the operations below may not represent all activities, but only those which information was available and documented

- Stainless Steel Operations On January 16, 1967, it was announced that RFETS would assume an expanded role in the atomic weapons program that would stem in part from the liquidation of stainless steel contracts with American Car and Foundry

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in Albuquerque A year later, on December 1, 1967, the stainless steel activities were acquired by DOW and by July of 1968 all stainless steel work had been transferred to Building 881 Between 1968 and 1985, Building 881 was involved in stainless steel parts fabrication and testing The stainless steel operations were transferred to Building 460 between 1983 to 1985

- Stainless Steel Fabrication A significant portion of the stainless steel work was fabrication of tritium reservoirs that were external to the plutonium pit Other stainless steel work included fabrication of the tubes and fasteners

Building 881 was not changed much to accommodate the stainless steel operations Stainless steel was purchased as bar stock from an off-site source Parts were machined in Rooms 244, 245, and 296 using water-soluble oil After machining parts were cleaned in freon, nitric acid, Nitradd and TCE using two vapor degreasers and an ultrasonic cleaning unit Approximately 50 gallons of TCE per month were used in the operations According to a 1974 report, steps were being taken at that time to eliminate TCE use by converting to an Oakite aqueous detergent

In October 1967 operations began sealing beryllium ingots into stainless steel containers The ingots were cast in Building 444 and sent to Building 881 for sealing and then sent to Building 883 for rolling and forming

- Inspection, Testing and Assembly After machining and cleaning operations, the stainless steel parts were then inspected X-rayed, and welded as part of assembly Various assembly operations consisted of clinching pressure fittings, tube bending, wire winding, solid film applications, fixture assembly, resin molding and adhesive assembly

Final cleaning of parts took place using solvents such as caustic and acidic solutions followed by an aqueous rinse A mechanical automated wash line was located in Room 238 Parts to be washed were placed in special racks on the wash line and sequentially dipped and rinsed in tanks of hot acid, caustic or cleaning solutions, and then rinsed The parts were carried in the racks by a chain driven mechanism Cleaning was performed using a special aqueous acid Nitradd system in a ventilated hood

- Non-Nuclear Metal Fabrication Non-nuclear joining was located in Room 317and consisted of brazing together non-radioactive metals such as stainless steel, vanadium, beryllium, and copper The metal parts were cleaned prior to brazing with a variety of solvents (typically acetone or alcohols) or acids After neutralization, aqueous wash was washed down the process drain while non-hazardous solid wastes are sent to the RFP landfill

- General Chemistry Lab Laboratory analytical operations conducted in Building 881 included atomic adsorption spectroscopy, inductively coupled plasma and direct current plasma emission spectroscopy, x-ray spectroscopy, furnace combustion

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analyses, semi-volatile, chemical analyses, ion chromatography, mass spectrometry, and radiochemistry Analyses were performed to support numerous site wide production activities, as well as environmental and waste management programs Little documentation exists on waste management activities during the early years of production After the enactment of RCRA, Laboratory waste was managed in accordance RCRA Satellite and 90-Day Pad requirements

- Health Physics Instrumentation Located in Room 114J, this unit maintained all hand probes and hand/foot probes throughout RFP Used Mylar film and tape was placed in a low-level waste drum and non-hazardous waste was sent to the REP landfill

- Micrographics Room 115 was used for document maintenance, including microfilming of documents The only chemicals used were fixers, developers, and cleaning solutions

- Cafeteria The southeast corner of the second floor of Building 881 operated as a cafeteria for several years The area was later converted to general office space

- Laundry The southwest corner of the second floor of Building 881 operated as the building laundry before being moved to Building 444

6 2 Current Status

Building 881 currently houses various support and administrative functions These functions include the following

- Central Computer Facility The central computer system for the RFETS site is located on the first floor of the building

- Utilities The utilities group in Building 881 provides building utilities for the entire Building 881 Cluster, including power supply, emergency power generation, chilled water supply and domestic water supply A wide variety of routine chemicals are used, and wastes are generated, such as lubricating oil, light ballasts containing PCBs, and fluorescent lightbulbs

- Storage Rooms 297 and 144 are currently used to store low-level radioactive waste drums Rooms 143A and Room 114D are 90-Day hazardous waste accumulation pads used to store maintenance wastes

- Other administrative functions include the Chemical Standards Laboratory, Records Maintenance, and 800 Area Radiological Operations and Radiological Engineering

7.0 POTENTIAL CONTAMINATION AND HAZARDS

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7.1 Radiological

Uranium process operations ended around 1966 Little documented spill/release and waste storage information exists prior to the establishment of RCRA reporting requirements Building 881 used stainless steel sheeting on the floor in most of its process areas to reduce the spread of contamination during a spill and to aid in decontamination efforts

Much of the removable contamination in Building 881 has already been removed or painted over The building has numerous areas with some degree of past contamination (i e , plutonium or uranium) in ducts, under floors, behind walls, in pipes, etc Exact levels of contamination are not presently known and have not been surveyed

A brief summary of suspected contamination is identified below This summary is not intended to be a complete list of suspected contamination in the building

- In January of 1990, during routine inspection of the filter plenums in the Building 881 Annex duct work, elevated concentrations of uranium and plutonium were found on the downstream side of filters in the north half of the plenum It was ascertained that the contamination reached the downstream side as a result of disturbance of residual ductwork contamination, which occurred during a scheduled filter change in December 1989 Building 881F, the new exhaust filter plenum began operation in 1991

- On September 21, 1989, a utility worker discovered that the process waste tank had over-flowed onto the floor with excess water from the acid scrubbers in Room 266 This incident resulted in the filing of a RCRA Contingency Plan Implementation Report (89-013)

- Room 114A contains a caustic scrubber, which has known internal contamination

- Room 199 housed a three-story pulse column The column had been known to break in the past, resulting in area contamination This column has been removed and the room has been decontaminated

- Room 149, the elevator, elevator pit and under the floor tile outside the elevator is suspected of being radiologicaly contaminated

- The floor tile in Room 110 may cover contamination caused by leaking process waste lines from the old laundry that was located in the building

- The Historical Release Report makes a very general statement that the "Fire sprinkler system contains unknown types and amounts of radioactive contamination and needs to be removed" It is not clear if the part of the fire sprinkle system that was contaminated has been removed It is known that the sprinkler system contains back-flow preventers to prevent the spread of contamination within the system It is likely that the part of the fire sprinkler system that had possible contamination was related to the old contaminated ventilation system, which has been partially removed

7.2 Consent Order Areas

Consent order areas are rooms or cabinets that were determined to be high risk due to high radiological and/or chemical contamination during the chemical clean-out of Building 881 Due to the high risk, CDPHE agreed that these areas would be dealt with at a later date In addition, these rooms/cabinets would not be entered without first notifying CDPHE Below is the list of consent order areas located in the Building 881 Facility, Work Control Package Procedure (WCPP) appendix 4

1) Room 15A - Room in CA
2) Room 114A - Room in CA
3) Room 127A - Room in Be area and CA
4) Room 137 - cabinet is a CA in a Be area
5) Room 164 and 165 - old plenum is a CA
6) Room 233 - cabinet is a CA

7.3 Asbestos

Building 881 is known to contain some asbestos containing material (ACM) A comprehensive asbestos building inspection has not been performed Common ACM material is floor tiles, ceiling tiles, thermal insulation, and other building materials

In July and August of 1994 an asbestos baseline inventory was conducted on the Building 881 third floor mechanical area (EG&G 1994) This area represents approximately 14,000 square feet of the building's 250,000 total square footage The third floor mechanical area baseline inventory concentrated on the thermal system insulation Some asbestos was found in the thermal system insulation No baseline inventory was found for other areas of 881 or the supporting structures included in the 881 Cluster

7.4 Beryllium

Building 881 has several rooms on the "Location of Known Beryllium Areas" list These rooms are listed below Building 881 and Building 881F are the only buildings in the Building 881 Cluster with location identified as known beryllium areas This list is not intended to be a comprehensive list of current Be contamination areas, but instead intended to provide an indication of the extent of Be contamination in the Building 883 Cluster Be sampling will be performed, as needed, throughout the D&D processes to determine the presence or absence of Be

BUILDING	ROOM	ACTIVITY
881	104	Unknown

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881	114	Unknown
881	114A	Unknown
881	122	Unknown
881	124	Unknown
881	127	Unknown
881	127A	Weighing beryllium and sample preparation
881	127B	Unknown
881	127C	Analysis of oxygen content of beryllium
881	128	Unknown
881	129	Unknown
881	130	Unknown
881	131	Emission spectroscopy
881	131B	Unknown
881	131C	Unknown
881	137	Beryllium sample cutting and material certification
881	137C	Unknown
881	137D	Unknown
881	139	Atomic adsorption analysis and material certification
881	140	Unknown
881	141	Unknown
881	142	Unknown
881	143	Proof and leak, and assembly
881	143E	Inertial Fusion
881	143F	Inertial Fusion
881	154	Proof, assembly and leak test components
881	170	Unknown
881	171	Unknown
881	199	Inertial Fusion
881	224	Sample Cutting, weight, and oxygen analysis and purity of Be
881	225	Beryllium
881	226	Be standards preparation, proof and leak, and assembly
881	244	Unknown
881	245	Unknown
881	265	Unknown
881	266	Unknown
881	281	Unknown
881	282	Sample cutting, and cleaning development
881	283A	Inertial Fusion
881	299	Unknown
881	317	Unknown
881 F	N/A	North and south plenum for building 881, exhausts Be operations

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7.5 RCRA Regulated Units

Building 881 has several areas on the "Master List of RCRA Units" These areas are listed below Building 881 and Building 887 are the only buildings in the Building 881 cluster with location identified on the Master List of RCRA Units

Unit #	Building	Unit Description	Regulatory Status	Closure Status
26	881	Container Storage Rm 266B	No longer subject to RCRA	Closed in accordance with "Final Phase 1 RFI/RI Work plan for OU-15"
32	881	Cyanide Bench Scale Treatment Rm 131C	No longer subject to RCRA	Closed in accordance with "Final Phase 1 RFI/RI Work plan for OU-15"
881 3A	881	Electrochemical Chlorinating Process Rm245	Permitted	Modification Request 01-04, submitted to CDPHE 03/23/01, removes RCRA Unit 881 3A from the RFETS Permit Awaiting approval
881 3B	881	Bench Scale Treatment Unit Rm 267	Permitted	ACTIVE, to be closed in accordance with the Closure Description Document for UV Oxidation Unit 881 3B (CDD covers UV oxidation process only) and with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97), (remaining processes within Unit 881 3B) UV oxidation process closed by removal Modification Request 01-04 (submitted to CDPHE 03/23/01)removes UV oxidation process from the RCRA permit
887 2A	887	Process waste Tank T-183	Permitted	RCRA STABLE (00-RF-02076) approved by CDPHE 11/27/00, subject to quarterly inspections, to be closed in accordance with "Closure Plan for Interim Status Units at RFETS " to be closed in accordance with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97)
887 2B	887	Process waste Tank T-184	Permitted	RCRA STABLE (00-RF-02076) approved by CDPHE 11/27/00, subject to quarterly inspections, to be closed in accordance with "Closure Plan for Interim Status Units at RFETS " to be closed in accordance with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97)
887 2C	887	Process waste Tank T-185	Permitted	RCRA STABLE (00-RF-02076) approved by CDPHE 11/27/00, subject to quarterly inspections, to be closed in accordance with "Closure Plan for Interim Status Units at RFETS " to be closed in accordance with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97)
887 2D	887	Process waste	Permitted	NOT IN ACTIVE USE, BUT NOT RCRA

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		Tank T-802A		STABLE, to be closed in accordance with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97)
887 2E	887	Process waste Tank T-802B	Permitted	RCRA STABLE (00-RF-02076) approved by CDPHE 11/27/00, subject to quarterly inspections, to be closed in accordance with "Closure Plan for Interim Status Units at RFETS " to be closed in accordance with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97)
887 2F	887	Process waste Tank T-802C	Permitted	RCRA STABLE (00-RF-02076) approved by CDPHE 11/27/00, subject to quarterly inspections, to be closed in accordance with "Closure Plan for Interim Status Units at RFETS " to be closed in accordance with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97)
887 2G	887	Process waste Tank T-802D	Permitted	RCRA STABLE (00-RF-02076) approved by CDPHE 11/27/00, subject to quarterly inspections, to be closed in accordance with "Closure Plan for Interim Status Units at RFETS " to be closed in accordance with RCRA Part B Permit No CO-97-05-30-01, Part X (6/30/97)

7.6 Idle Equipment

Building 881 is the only building in the Building 881 Cluster with Idle Equipment on the Idle Equipment Management Plan's list of RCRA Hazardous Equipment The site wide Idle Equipment Management Plan no longer tracks RCRA non-hazardous equipment An outdated list of RCRA non -hazardous equipment can be obtained from the RFETS Environmental Systems and Stewardship Group

ID#	Loc (Room)	Description	Rad	Type of Material	HAZ Matl	Quantity
881-0026	114A	HYDROFLORIC ACID SCRUBBER	Yes	HYDROFLUORIC ACID	Yes	DRY RESIDUE

8.0 BUILDING 881C - COOLING TOWER

Building 881 is supplied with cooling water from four water-spray cooling towers CT-1 is mounted on a steel frame on the roof of Building 881, CT-2 is located just south of Building 881G and is mounted on a concrete pad, CT-3 is located east of Building 881 and is mounted on concrete pillars and CT-4 is located north of Building 881 and is mounted on concrete pillars Although each tower varies in size, they are each approximately 10-feet wide by 15-foot long and 10-feet high

CT- 4 provides cooling water to both Building 881 and 883 and is included in the Building 883 Cluster and is identified as Building C883 CT-3 is also identified as Building C881 CT-1, CT-2, CT-3 and CT-4 cooling towers are all currently active

9.0 BUILDING 881F - FILTER PLENUM

Building 881F is known as the filter plenum for Building 881and is a 8,000 square foot metal-siding on metal-frame building located on the roof of Building 881 It houses four 150-horsepower exhaust blowers located around a central HEPA filter exhaust plenum This building began operations in the late 1980s (the HRR states Building 881F began operation in 1991, but this is believed to be incorrect) and replaces the function of the two exhaust plenums in the northeast corner of the first and second floors of Building 881 Related equipment includes exhaust fans, filters, ducting, and a fire-protection system Building 881F receives exhaust from the Building 881 air duct systems The air first passes through metal demisters, then through two stages of HEPA filter banks Some exhaust is then passed through the ethylene glycol heat recovery system The air then passes through the four exhaust fans and exits vertically to the atmosphere through the associated exhaust stacks

Building 881F is currently active and provides the main ventilation for Building 881

10.0 BUILDING 881G - EMERGENCY GENERATOR FACILITY

Building 881G is a metal building on the first-floor level of Building 881 immediately south of the Building 881 exterior wall Building 881G houses one 400-kilowatt (kW) and one 1,400 kW diesel generator Both are fueled from a 4,000-gallon, aboveground storage tank (TK 66) The old diesel tank (Tank 002) is a 5,000-gallon underground tank to the east of Building 881G and was foamed and abandoned in place (refer to 20 0)

Building 881G is currently active with both emergency generators operational

11.0 BUILDING 881H - ELECTRICAL EQUIPMENT BUILDING

Building 881H is a 1,900 square foot, prefabricated metal building, constructed on a concrete slab, and is located on the east side of Building 881 This building houses the primary electrical interface between Building 881 and the site power distribution system Building 881H houses various disconnect switches, switchgears, breakers, and distribution panels

Building 881H is active and operational as the power distribution system for Building 881

12.0 881 TUNNEL

The 881 tunnel connects the northwest corner of Building 881 to the southwest basement corner of Building 883 The tunnel is 192-feet long, 8-feet wide and 10-feet high It is constructed of poured-in-place concrete The tunnel has a floor slab 1-foot, 3-inches

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thick, with walls 10-inches thick and roof slabs 12-inches thick The tunnel was originally used to transport enriched uranium parts and other material between the two buildings

The 881 tunnel is currently inactive, its access door is locked, and access to the tunnel is restricted The 881 tunnel was not available for inspection during the development of this HSA

13 0 BUILDING 887 - SANITARY AND PROCESS WASTE LIFT STATION

Building 887 is a two-level structure, just south of Building 881, designed as a waste collection and transfer building which stores process waste in stainless steel tanks until they are ready to be transported by the site's waste process lines to Building 374 for treatment The transfer of waste from Building 887 to Building 374 for treatment was control by Value Vault #1 located west of Building 881

Building 887 was built in 1963 and has two reinforced-concrete vaults below grade and a concrete, two-story, pump house whose first floor is above grade The building houses seven 2,500-gallon stainless steel tanks and associated pipes, sample points, and pumps to accomplish transfer of waste from Building 881 to Building 374 for treatment The tanks in Building 887 are RCRA permitted tanks that are classified as "Not in Active Use" but not "RCRA Stable"

The underground exterior walls are 12-inches thick on continuous footings The floor slab is 6-inches thick, and the roof slab is 12-inches thick The roof is covered with 1 inch of insulation and finished with a built-up roof There are hatches for access to the tanks, and several round ducts provide ventilation The entrance to the facility has a single door, and there is a steel stair down to the main chamber

14.0 BUILDING 890 - COOLING TOWER PUMP HOUSE

Building 890 is the original, one-story, cooling tower pumphouse constructed in 1953 The cooling tower pumphouse is located north east of Building 881 Building 890 is 12-feet wide by 26-feet long, and 8-feet high and is built into the hillside The pumphouse has 8-inch thick concrete floor slabs, 8-inch thick concrete walls and a 6-inch thick roof slab The roofing of the pumphouse has 1 inch of insulation plus a built-up roof The pumphouse contained two 500-gpm pumps, each powered by a 30-hp motor The pumps, controllers and piping have been removed

Building 890 is not active but is sometimes used for storage

15.0 BUILDING 890 PAD

The 900-ton capacity cooling tower, which was located east of Building 881, was constructed in 1953 when Building 881 was built The tower has since been removed The prefabricated wood cooling tower was 20-feet high and had wooden stairs at the south end The tower had an automatic water sprinkler system

The reinforced concrete basin of the cooling tower was 22-feet,10-inches wide by 75-feet, 9-inches long and had a minimum depth of 6-feet, 11-inches

East of the old Building 890 cooling tower is an approximately 6-foot by 15-foot structure that extends about 4-feet below grade This structure was used to regulate and control the distribution of the cooled water from the cooling tower

The cooling tower and the associated pumps have been removed, and four new exterior towers (CT-1 through CT-4) now provide cooling The pad was covered with earth and vegetation, and has since been covered with asphalt and has a 4-inch concrete pad poured on the asphalt The exact date the old cooling tower was removed is not known, but believed to be in the mid 1980s

16.0 STACKS S-1, S-2 AND S-3

The reinforced concrete exhaust stack S-1 is part of the old ventilation system and is approximately 100 feet north of Building 881 Stack S-1 has an inside diameter of 14 feet, is 33 feet underground, and is 100 feet high above ground The concrete connecting tunnel is 70-foot long on the level and slopes up for another 23 feet The level portion is 12-feet wide by 15-feet high inside The floor slab is 1-foot, 4-inches thick and the walls and roof slab are 1-foot, 2-inches thick

Stack S-2 is also attached to the old ventilation system and is approximately 75 feet north of Building 881, Stack S-2 is a steel stack and is connected to two concrete tunnels emerging from the east side second floor of the building The stack tunnels are 4-feet 11-inches wide by 5-feet 5-inches high inside The floor slabs are 12-inches thick and the walls and roof 10-inches thick

Stack S-3 is the boiler flue is located at the southeast corner of the Building 881and is connected to the boiler room Stack S-3 is a steel stack with a reinforced concrete base and tunnel The flue tunnel is 20-feet long and 7-feet square (inside) from the building wall to the concrete square stack base The bottom and top slabs of the tunnel are 1-foot, 4-inches thick and the walls are 1-foot thick The square tunnel of the stack extends from 50-feet, 6-inches underground to approximately 4-feet above the grade line The square tunnel has concrete walls 1-foot, 2-inches thick and a concrete footing 11-feet square and 1-foot, 6-inches thick The steel stack above ground is 7-feet in diameter and 50-feet high

Stacks S-1, S-2 and S-3 are currently not in use

17.0 881 CLUSTER EXTERIOR TANKS

881 cluster has 3 tanks identified on the facility list These tanks are

- TK66 – Diesel Storage Tank is steel aboveground diesel storage tank that was installed to replace Tank 002 TK66 is operational with a secondary containment system

- Tank 002 – Steel Fuel Tank is an underground tank south of Building 881G This tank has been closed and foamed in place prior to 1981

- Tank 029 – Helium Storage Tank is an aboveground tank east of 881 This tank is not in use

18.0 INDUSTRIAL HAZARDOUS SUBSTANCE SITES (IHSS), POTENTIAL AREAS OF CONTAMINATION (PAC) AND UNDER BUILDING CONTAMINATION (UBC)

The Building 881 Cluster has several IHSSs, PAC, and UBC that are either in the buildings, under the buildings, or close enough to the buildings, to warrant mention in this report Additional information can be found in the individual IHSS/PAC reports Many of these IHSS, PACs, and UBCs are not within the scope of this project They have been identified to provide general information about events, which have occurred in the vicinity of the Building 881 Cluster facilities

UBC

Building 881 and Building 887 are on the UBC list as UBC-881 and UBC-887 The UBC list is not intended to be a complete list of buildings with UBC, but rather a list of buildings whose operating history or historical events show that under building contamination may exists

- UBC 881 This UBC is still active Building 881 houses the Chemical Standards Lab, the Central Computer System, and Office Support Operations Various other operations have been conducted in the building, such as uranium recovery, machining and fabrication Use of this building began in 1953

  Waste lines have been broken with probable infiltration to the soil

- UBC887 This UBC is active This building houses process waste and sanitary waste holding tanks Use of this building began in 1953

  On September 21, 1989, a utility worker discovered that the process waste tank had over-flowed onto the floor with excess water from the acid scrubbers in Room 266 This incident resulted in the filing of a RCRA Contingency Plan Implementation Report (89-013)

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IHSS and PAC

- IHSS/PAC 800-102 "Oil Sludge Pit" 1958 This IHSS was approved NFA in the OU-1 CAD/ROD

  There is an area south of building 881 that was reportedly used to bury 30 to 50 drums of non-radioactive material dumped in a pit approximately 200 to 500 ft south of building 881 The material was believed to be oil sludges from tank clean-outs The pit was backfilled when disposal operations ceased This IHSS also states that no documentation was found which verifies the existence of this site Interview were conducted in 1991 with RFP personnel who were employed at the time of the incident could not recall any such dumping

- IHSS/PAC 800-103 "Chemical Burial" Unknown This IHSS was approved NFA in the OU-1 CAD/ROD

  There is an area south of building 881 that was reportedly used to bury unknown chemicals This IHSS also states that No documentation was found which verifies the existence of this site Interview were conducted in 1991 with RFP personnel who were employed at the time of the incident could not recall any such dumping It is possible that these reports of dumpling have been confused with Trench T-2 (south east of 881) Trench T-2 was suspected of being used to dump chemicals

- IHSS/PAC 800-104 "Liquid Dumping" Prior to 1969 This IHSS was approved NFA in the OU-1 CAD/ROD

  The CEARP Phase 1 Report indicates that an area east of building 881 was used for disposal of unknown liquids and drums The exact location of the pit is not known No documentation was found to verify the existence of the site

- IHSS/PAC 800-105 1-800-105 2 "Building 881 Westernmost and easternmost Out-of-Service Fuel Tanks" 1959 to 1976 This IHSS is approved NFA in the OU-1 CAD/ROD

  Interviewees for the CEARP Phase 1 Report mentioned that asbestos was placed in two underground, out-of-service tanks located south of building 881 The tanks were later filled with concrete

- IHSS/PAC 800-106 "Out-fall" Early 1950's to December 1977 This IHSS was approved NFA in the OU-1 CAD/ROD

  In the 1950's and the 1960's intermittent discharge of untreated sanitary waste took place in an area south of building 881 Although the practice was halted, the out-fall continued to be used for discharges of the cooling water blow-down into the late 1970's Although, radioactivity was not found above background levels, bacterial counts at the out-fall were elevated

- IHSS/PAC 800-107 "Building 881 hillside Oil Leak" 1973 This IHSS is approved NFA in the OU-1 CAD/ROD

  In 1973 oil was discovered flowing from the slope south of building 881 The origin of the oil is not known It was thought that the oil came from either two out-of-service fuel oil tanks or a nearby oil sludge pit A well to the west indicated the presence of volatile organic compounds and radionuclides

- IHSS/PAC 800-145 "Sanitary waste line leak" January 21, 1981 This IHSS is approved NFA in the OU-1 CAD/ROD

  The sanitary waste line was found to be leaking on the hillside south of building 881 A dirt dike was used to prevent drainage to the south Interceptor ditch and Woman creek The line waste repaired on January 30, 1981

  The sanitary waste line was used from 1969 to 1970 to transport radioactive laundry effluent

- IHSS/PAC 800-147 2 "Building 881 Conversion activity Contamination" 1964 and 1966 This IHSS was approved NFA in 1999

  An area approximately 250-feet east of building 883 and 450-feet south of Central Avenue may have been used to store equipment during the conversion activities, which took place in Building 881 in 1964 Interviews with formed RFP employees indicate that this equipment may have been contaminated with Beryllium and Uranium This location is now covered with a parking lot

- IHSS/PAC 800-177 "Building 885 Drum and Paint Storage Building" 1953 to present This IHSS is active

  Starting in 1953 Building 885 was used to store drummed waste from Building 881 Building 885 was a RCRA 90-day accumulation area

  In 1972, the drain water from the sump that drains the floor of Building 885 was found to have an elevated water temperature of 150 degrees Fahrenheit The cause of the elevated temperature was never identified Building 885 had a history of poor housekeeping practices Records indicate that radioactive contaminated oil sludges were inadvertently dumped into an open-top dumpster located at Building 885

- IHSS/PAC 800-178 "Building 881 Drum Storage Area" 1953 to present This IHSS is approved NFA in the OU-15 CAD/ROD

  Starting in 1953 Room 165 was used to store up to a total of 5 drums volatile compound and possibly radioactive waste This room was used as a RCRA 90-Day accumulation area There have been no documented releases

- IHSS/PAC 800-211 “Building 881 Drum Storage Unit #26” 1981 to present This IHSS is approved NFA in the OU-15 CAD/ROD

  The Building 881 Drum Storage Area was first used in 1981 and was used as a 90-Day accumulation area The storage area is in Room 266B that measures 20-feet by 10-feet The stored drums contain mainly laboratory process waste, which include low level radioactive waste and combustible hazardous wastes There have been no documented releases

- IHSS/PAC 800-217 “Building 881 Cyanide Bench Scale Treatment, Unit 32” 1986-September 1988 This IHSS is approved NFA in the OU-15 CAD/ROD

  Room 131C in Building 881 housed a bench scale hazardous waste treatment facility, which operated from 1986 to 1988 Waste for laboratory analysis was collected in four liter bottles (usually took about 4 months to fill) The contents of the bottles were then reacted with sodium or calcium phyochlorite to oxidize the cyanide to cyanate Once neutralization was complete, the contents were poured down the process waste drain for transport to building 374 for further treatment

  There have been no documented releases related to the Cyanide Bench Scale Treatment

- IHSS/PAC# 800-1207 “Radioactive Site South of Building 883” 1958 to 1981 This IHSS was proposed NFA in the 1966 HRR annual up-date and is awaiting approval

  Low levels of soil contamination in the area between building 883 and 881 have been documented as early as 1958, possibly caused by the plutonium fire in 1957

- IHSS/PAC 800-1205 “Building 881 East Dock” 1953 to 1990 This IHSS is active, however NFA justification is being developed

  Building 881's east Dock may have been contaminated during uranium and plutonium operations from 1953 to 1964 when the building was converted to general support activities The CEARP Phase 1 report indicated that the dock may have been contaminated in February 1990, but no mention of what caused the contamination

  The only document incident found was that the condensate pan overflowed in the area on January 7, 1990

- IHSS/PAC# 800-1206 “Fire, Building 883” October 1982 This IHSS was approved NFA in 1999
  A contaminated trash container fire occurred in building 883 on October 27, 1982 during grinding operations Maintenance personnel placed the container outside the building and called the fire department No documentation was found that detailed constituents released except that the container contained contaminated trash

- IHSS/PAC 800-1208 "Transformer 881-4" Unknown to 1987 This IHSS was proposed NFA in the 1996 HRR annual up-date and is awaiting approval

  Transformer 881-4 is located on the north side of building 881 Utilities reported that the transformer might have leaked prior to being retro-filled in 1987 Visual inspection of the transformer in February of 1986 revealed a leak on the top and bottom valves, tap changer and pad

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19.0 BUILDING 881 CLUSTER PRELIMINARY LIST OF POTENTIAL AREAS OF CONCERN

	Building 881	Building 881C	Building 881F	Building 881G	Building 881H	Building 887	Building 890	Stack 881S1	Stack 881S2	Stack 881S3	881Tunnel	890 Pad	TK66	Tank 002	Tank 029
Asbestos	X	X	X	X	X	X	X	X	X	X	X		X		
Beryllium	X		X			X		X	X	X	X				
Lead															
Lead -paint	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Lead - electrical equipment	X	X	X	X	X	X									
Lead-processes (storage, operations, wastes)	X														
Lead - shielding	X														
PCBs															
PCBs - paint	X	X	X	X	X	X	X	X	X	X	X		X	X	X
PCBs - equipment	X	X	X	X	X	X									
PCBs - ballasts	X		X	X	X	X									
VOAs	X		X	X		X	X						X	X	X
Semi-VOAs	X		X	X		X	X						X	X	X
Acids	X					X									
Bases	X					X									
Metals	X	X	X	X		X	X			X		X			
Radiological															
Am	X		X			X		X	X						
Cobalt - 60															
Curium-244	X		X			X		X	X						
Thorium	X		X			X		X	X						
Pu	X		X			X		X	X						
U - 232	X		X			X		X	X						
U - 233	X		X			X		X	X						
U - 235	X		X			X		X	X						
U - 238	X		X			X		X	X						
U - 239	X		X			X		X	X						

Note This is a preliminary list of potential COCs based on a review of the historical processes, the HRR, the facility WSRIC and the interviews The characterization SMEs should evaluate/verify this information and modify this list during building walkdowns and characterization development as appropriate

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Note: This is a preliminary list of potential COCs based on a review of the historical processes, the HRR, the facility WSRIC and the interviews. The characterization SMEs should evaluate/verify this information and modify this list during building walkdowns and characterization development appropriate.

Note: See facility WSRIC for additional information

Note: Lead in Paint will be managed in accordance with the RFETS Guidance Document 27 "Lead Based Paint (LBP) and LBP deposal"

20.0 Waste Volumes for the 881 Cluster Buildings and Tanks

Waste Volume Estimates and Material Types							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste
881	**690,100**	**500**	**4,550**	**0**	**1,670**	**4,600**[1]	**Roofing-Buildup 11,320 cu ft**
881C	**100**	**0**	**2,400**	**0**	**0**	**TDB**	**Insulation 300 cu ft**
881F	**300**	**0**	**3,500**	**0**	**0**	**TDB**	**Roofing-Buildup 2,400 cu ft**
881G	**2190**	**0**	**200**	**0**	**0**	**TDB**	**Roofing-Buildup 375 cu ft**
881H	**1400**	**0**	**990**	**0**	**0**	**TDB**	**Roofing-Buildup 725 cu ft**
887	**1,820**	**0**	**10**	**0**	**0**	**TBD**	**Roofing -Buildup 360 cu ft**
890	**1,060**	**0**	**0**	**0**	**0**	**TBD**	**Roofing-Buildup 110 cu ft**
881S1	**15,570**	**0**	**0**	**0**	**0**	**TBD**	**0**
881S2	**950**	**0**	**250**	**0**	**0**	**TBD**	**0**
881S3	**490**	**0**	**180**	**0**	**0**	**TBD**	**0**
890 Pad	**750**	**0**	**0**	**0**	**0**	**0**	**0**
881 tunnel	**7,060**	**0**	**0**	**0**	**0**	**TBD**	**0**
TK66	**100**	**0**	**150**	**0**	**0**	**0**	**0**
Tank 002	**0**	**0**	**250**	**0**	**0**	**0**	**0**
Tank 029	**70**	**0**	**250**	**0**	**0**	**0**	**0**

[1] Volume will be re-estimated after the facilities are inspected and related analytical data are assessed

Prepared By: Doug Bryant / [signature] / July 2001

Name Signature Date

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B881-A-000017

D&D RISS Facility Characterization
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Facility ID Building 881 Cluster Facilities, which includes B881, B881C Cooling Tower, B881F Filter Plenum, B881G Emergency Generator, B881H Electrical Equipment, B881/B883 Tunnel, B830 Isolated Power, B882 Pad, B885 Paint & Oil Storage, B887 Sanitary & Process Waste Lift Station, B890 Cooling Tower Pump House, B890 Pad, B881 Stacks S-1, S-2, and S-3, B881 Cluster Exterior Tanks TK66 Diesel Storage, Tank 002 Steel Fuel Tank, Tank 013 Concrete Foundation Drain **Anticipated Facility Type (1, 2, or 3)** B881 = Type 2, B881C = Type 1, B881F= Type 2, B881G – Type 1, B881H = Type 1, B881/B883 Tunnel = Type 2, B830 = Type 1, B882 Pad = Type 1, B885 = Type 1, B887 = Type 2, B890 = Type 1, B890 Pad = type 1, B881 Stacks S-1 = Type 2, S-2 = Type 2, and Stack S-3 = Type 2, B881 Cluster Exterior Tanks TK66 = Type 1, Tank 002 = Type 1, Tank 013 = Type 2 This facility specific Historical Site Assessment (HSA) – Interview Checklist has been conducted in accordance with *D&D Characterization Protocol*, RFETS MAN-077-DDCP, latest version, and *Facility Disposition Program Manual*, RFETS MAN-076-FDPM, latest version
Personnel Interviewed (Name, Title, and Function) Richard A Link, Radiological Engineer, Building Closure Support, RISS Closure Support, and PU&D Radiological Support
What time frame did the interviewee work in the facility? What was his/her function(s)? Mr Link has worked in B881 since 1962, off and on for approximately 35 years, and is presently working in B881 Mr Link supports various groups throughout the Plant Site in the area of Radiological Support
Has the building configuration changed since you worked in the building (e g , rooms & equipment)? Have there been any building renovations? If so, in what way? Yes, Mr Link said that B881 has changed very much since he started working there in 1962 Mr Link said in 1962 uranium processing was still in operation and continued to operate until approximately 1966 Mr Link said that after the decision was made to move all the uranium processing to Oak Ridge, all of the B881 uranium processing equipment was removed After the uranium processing equipment was removed, the process rooms were decontaminated to an acceptable level of removable contamination Mr Link said that the cold J-Line stainless steel work was moved into B881 The J-Line work operated in B881 until B460 was built and then it was re-located to B460
What operations/processes were conducted in the building during the interviewee's time in the facility? Interviewee, Mr Link, said that when he started working in B881 all of enriched U-235 recovery processes were operating, including solvent extraction, precipitation, calcination, fluorination, and reduction to U-235 metal buttons Mr Link said U-235 foundry casting operations and U-235/U-238 machining operations were also in operation in the 1962-1966 time frame Other special projects included U-233 complete processing from liquid feed solutions to metal buttons and foundry cast parts for machining Mr Link said that in B881, Room 266, O-Y Leaching (which removes Pu contamination from U-235 parts) and part decontamination were performed to remove detectable amounts of U-235/U-233/Pu-239 from the Be parts Mr Link also said some depleted U-238 work was also performed in B881 Mr Link said that U-235 processing rooms all had welded stainless steel floors, and the work was performed in chemical stainless steel hoods that had air exhausts and in some cases acid fume scrubbers The dates and room numbers given by the interviewee, Mr Link, here is to the best his recollection

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D&D RISS Facility Characterization
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What types of equipment were used, and where was the equipment located? (specific rooms/areas) Interviewee, Mr Link, said that all types of lab hoods and lab analysis equipment were used both in the downstairs General Labs (Rooms 101, 104, 110, and Room 137) and the Chemistry Labs on the east side of the north/south hallway on the second floor Mr Link also stated that the Analytical Labs routinely analyzed U-235, U-233, U-238, U-239, and Pu-239 samples In addition, Mr Link said that Be samples were also analyzed Mr Link also said the following rooms were specifically for Room 296 Depleted U-238 Machining, Room 245 Enriched U-235 Machining, Rooms 294/295 Enriched 2-235 Casting, Room 242 Enriched U-235 Reductions and Casting
Were any radioactive materials or equipment handled in the building (e g , wastes, residues, product, feed material, sealed radioactive sources)? If so, what types and where? Mr Link said yes, historically (1962-1966) B881 handled Pu, Am, U-233, U-235, U-238, and U-239 The B881 Analytical Labs (Analytical Labs operated supporting other buildings on Site many years after the U-235 processing was moved to Oak Ridge) would have handled all of these same elements in the form of analytical samples and routinely performed U and Pu isotopic analysis Mr Link also stated that "Pure Beta Emitters" and/or "Mixed Fission Product" might have been present in the form of "Sealed Sources" Mr Link further stated these same "Pure Beta Emitters" and/or "Mixed Fission Product" may have been present in the parts per billion ranges in the uranium materials processed
Were there any Research & Development area (past or present) located in the facility or area? If so, where? Yes, as per interviewee Mr Link, R&D cold testing of pumps, sampling equipment, etc was routinely performed in the R&D Lab Areas of B881 Mr Link further stated that he did not think R&D worked with any fissile or radioactive materials because at this time the B881 Criticality Detection System had been removed
Were any chemicals (e g , Beryllium, RCRA/CERCLA Constituents, PCBs, etc) handled in the building? If so, what types and where? Mr Link said various rooms in B881 contained Be standards, Be metal, Be oxide, Be waste solutions, and Pu, Am, U233, U235, U238, U239 waste solutions (acids and bases) Mr Link said he felt that old lighting ballast transformers probably still contain PCBs Interviewee, Mr Link, did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)
Were there any Asbestos Containing Materials (e g , transite wall board, ceiling tiles, floor tile), lead shielding, equipment utilizing PCB oils (e g , process equipment, lifts, hydraulic systems, etc), or any other chemical hazards (past or present)? Mr Link said that he thought most of ACM insulation materials and PCB oils in transformers have been removed from B881 Mr Link said he thought many offices, hallways still contained suspect asbestos floor tiles and ceiling tiles and in many cases ACM wall panels Mr Link said that Be was routinely handled and/or processed in Rooms 242, 245, 266, and Room 296 as well as many of the Analytical Labs in the form of analytical samples Mr Link remembered that lead bricks were routinely used for shielding in most lab areas of B881 Interviewee, Mr Link did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)
Did any spills or uncontrolled release of radioactive materials or chemicals occur while you worked in the building? If so, what types, quantities, and where? Interviewee, Mr Link, said many radioactive spills occurred in B881 involving acids and basic solutions that contained enriched U-235 Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)
Were these spills/releases cleaned up or mitigated? If so, how, and to what extent? Mr Link said radioactive spills/releases were cleaned up using soap, detergents, and water Acidic radioactive spills were cleaned up, neutralized, and water flushed as necessary

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Do you know of any additional issues, concerns, or process knowledge that could affect facility characterization?

Yes, interviewee Mr Link said that he thought any process area or process room in B881 potentially could have U-235 contamination under the stainless steel floor covering Another concern Mr Link has is that some of the "Air Ducts" in the "unexcavated" area north of Tunnel 12 and south of Tunnel 16 in the B881 Basement could have perchloric acid (which would have come from Lab Hoods that used to be in Rooms 101 and 104) residue/crystals which can be explosive, this could affect facility characterization and/or D&D removal A third concern that Mr Link voiced was that several large electrical conduits run under the floor of Tunnel 15 in the B881 Basement There are one or two Manhole access ports to these electrical conduit runs under the tunnel floor What else is down there is what concerns Mr Link, because the Tunnel 15 floor has some covered (with plastic) "hot spots" which means contamination could be under the tunnel floor and in the electrical conduit areas

Interviewee Mr Link did not have any information on the other B881 Cluster Facilities (exterior buildings or exterior tanks)

Prepared By Bob Sheets / Bob Sheets / 5/30/2001

Print Name Signature Date

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Facility ID. 883
Anticipated Facility Type (1, 2, or 3): 2

This facility specific Historical Site Assessment (HSA) - Interview Checklist has been conducted in accordance with
D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Personnel Interviewed (Name, Title, and Function)

Dick link was interviewed to clarify two statements that were made during his interview dated 5/10/01(performed by Bob sheets) In attendence at this clarification interview was Dick Link, Jay Britten, Duane Parsons, and Doug Bryant.

What time frame did the interviewee work in the facility? What was his/her function(s)?

Mr Link worked at B883 from 1962 until 1985 as the Health Physics representative for the B883 Cluster

Has the building configuration changed since you worked in the building (e g , rooms & equipment)? Have there been any building renovations? If so, in what way?

Not Discussed

What operations/processes were conducted in the building during the interviewee's time in the facility?

Not Discussed

What types of equipment were used, and where was the equipment located? (specific rooms/areas)

Not Discussed

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Were any radioactive materials or equipment handled in the building (e g , wastes, residues, product, feed material, sealed radioactive sources)? If so, what types and where? **Clarification 1** - In the Dick Link interview dated 5/10/01, the interviewer wrote that the 4-H Mill (also known as the HPM Press) may have low levels of Pu cross-contamination from~~or~~ working with Uranium material which had Pu contamination on it. The sampling strategy to address this Pu cross-contamination will be detailed in the B883 Cluster Characterization Plan **Clarification 2** – In the Dick Link interview data 5/10/01, the interviewer wrote that Mr Link said that the pure beta emitters, Strontium-90, Tritium (H-3), Phosphorous-32, nickel-63 and mixed fission products Cesium-137, Cobalt-60, and Technicium-99 were present in the ppb range as impurities in all the radioactive materials worked After further clarification, Mr Link stated that the impurities in the depleted Uranium material worked was at the ~~nCi~~pCi/ gram levels or less and that at these low level they were not a contaminant of concern See The B883 Characterization Plan for more details
Were there any Research & Development area (past or present) located in the facility or area? If so, where? Not Discussed
Were any chemicals (e g , Beryllium, RCRA/CERCLA Constituents, PCBs, etc) handled in the building? If so, what types and where? Not Discussed
Were there any Asbestos Containing Materials (e g , transite wall board, ceiling tiles, floor tile), lead shielding, equipment utilizing PCB oils (e g , process equipment, lifts, hydraulic systems, etc), or any other chemical hazards (past or present)? Not Discussed
Did any spills or uncontrolled release of radioactive materials or chemicals occur while you worked in the building? If so, what types, quantities, and where? Not Discussed
Were these spills/releases cleaned up or mitigated? If so, how, and to what extent? Not Discussed
Do you know of any additional issues, concerns, or process knowledge that could affect facility characterization? Not Discussed

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Facility ID Building 881 Cluster Facilities, which includes B881, B881C Cooling Tower, B881F Filter Plenum, B881G Emergency Generator, B881H Electrical Equipment, B881/B883 Tunnel, B830 Isolated Power, B882 Pad, B885 Paint & Oil Storage, B887 Sanitary & Process Waste Lift Station, B890 Cooling Tower Pump House, B890 Pad, B881 Stacks S-1, S-2, and S-3, B881 Cluster Exterior Tanks TK66 Diesel Storage, Tank 002 Steel Fuel Tank, Tank 013 Concrete Foundation Drain

Anticipated Facility Type (1, 2, or 3): B881 = Type 2, B881C = Type 1, B881F= Type 2, B881G – Type 1, B881H = Type 1, B881/B883 Tunnel = Type 2, B830 = Type 1, B882 Pad = Type 1, B885 = Type 1, B887 = Type 2, B890 = Type 1, B890 Pad = type 1, B881 Stacks S-1 = Type 2, S-2 = Type 2, and Stack S-3 = Type 2, B881 Cluster Exterior Tanks TK66 = Type 1, Tank 002 = Type 1, Tank 013 = Type 2

This facility specific Historical Site Assessment (HSA) – Interview Checklist has been conducted in accordance with
D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Personnel Interviewed (Name, Title, and Function)
Duane I Hunter, Lab Manager, Manager of B881 from 1983-1986, Section Manager/Deputy Director of all Plant Labs Mr Hunter oversaw the B881 Labs, oversaw the B881 daily building operations, and later oversaw all Plant Lab facilities

What time frame did the interviewee work in the facility? What was his/her function(s)?
Mr Hunter worked in the B881 Analytical Labs from 1980 until 1995 as Lab Manager, B881 Manager, and later Section Manager/Deputy Director for all Plant Lab facilities,

Has the building configuration changed since you worked in the building (e g , rooms & equipment)? Have there been any building renovations? If so, in what way?
Yes, B881 has changed very much since Mr Hunter first started working the facility Building 881 went through a building renovation from approximately 1986 through 1988 During this time frame all of the Lab hoods were replaced, most of the hood exhaust ducts were also replaced, process waste lines were replaced, new booster fans were installed, and the new filter plenum building, B881F Filter Plenum Building was built and placed into service This renovation was required because in 1984-1985 it was determined that the 881 Annex Stack was releasing elevated levels of U and Pu In approximately 1985 the B881 Annex exhaust and plenum filtration was re-routed to exhaust through B881F, as per interviewee Mr Hunter The dates here are to the best recollection of the interviewee but the historical release report (HRR) has some different dates and the Projects Facility List has yet some different dates as to facility construction dates Several mistakes have been found in both the HRR and the Projects Facility List in the past

What operations/processes were conducted in the building during the interviewee's time in the facility?
Interviewee said that historically various types of analytical sample analyses were performed, including Pu, U, Am, U-233, U-235, U-238, U-239, and Be After all the U processing was removed from B881 (approximately 1966), Mr Hunter said the stainless steel J-Line Operations were moved into B881 and started operations in approximately 1966 The interviewee said that the B881 Labs still supported B444 and B883 for U and Be analyses Labs operated in B881 include the Mass Spec Lab, the Emission Spec Lab, and the Standards Labs Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks) The dates here are to the best recollection of the interviewee

What types of equipment were used, and where was the equipment located? (specific rooms/areas)
Interviewee said that all types of lab hoods and lab analysis equipment were used both in the downstairs General Labs (Room 137) and the Chemistry Labs on the east side of the north/south hallway on the second floor

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Were any radioactive materials or equipment handled in the building (e g , wastes, residues, product, feed material, sealed radioactive sources)? If so, what types and where?
Interviewee said that historically B881 handled U, Pu, Am U-233, U-235, U-238, and U-239 The B881 Analytical Labs would have handled all of these same elements in the form of analytical samples and routinely performed U and Pu isotopic analysis

Were there any Research & Development area (past or present) located in the facility or area? If so, where?
Yes, as per interviewee, R&D cold testing of pumps, sampling equipment, etc was routinely performed in the R&D Lab Areas of B881 Interviewee referred me to Chuck Baldwin for additional R&D information Interviewee Mr Baldwin said that R&D Non-Destructive Analysis labs, as well as an R&D Machine Shop, a Mechanical Engineering lab, and an Environmental Laboratory operated in B881 R&D activities, as per Mr Baldwin included waste treatment processes, corrosion studies, analytical support, mechanical devices, sample transfer systems, mechanical waste sampling systems, environmental studies, and waste and environmental analytical support When asked about "Pure Beta Emitters" and/or "Mixed Fission Product" in B881, interviewee Mr Baldwin said R&D had a cabinet where sealed sources were stored, but he did not know which types of sources were actually stored there Mr Baldwin said the radioactive sources were used for calibration and used by NDA instrumentation development folks (I E , Ron Harlan and Richard D Santopietro) Interviewee, Mr Hunter, said if someone needs this historical source information they could contact the Radiological Health Radioactive Source Registry Group on Site, X8450, Pager 212-6378, which is located in Building T-130B

Were any chemicals (e g , Beryllium, RCRA/CERCLA Constituents, PCBs, etc) handled in the building? If so, what types and where? Yes, as per interviewee, routine U, Pu, Am, U233, U235, U238, U239, and Be samples were analyzed in the B881 Labs Various rooms in B881 contained Be standards, Be metal, Be oxide, Be waste solutions, and U, Pu, Am, U233, U235, U238, and U239 waste solutions (acids and bases) Old power transformers in B881at one time contained PCBs but these transformers were drained, flushed, and refilled with non-PCB oils Mr Hunter said he felt that old lighting ballast transformers probably still contain PCBs Mr Hunter said that B881 Labs had to maintain an inventory of routine analytical chemicals and reagents used for analytical analysis Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)

Were there any Asbestos Containing Materials (e g , transite wall board, ceiling tiles, floor tile), lead shielding, equipment utilizing PCB oils (e g , process equipment, lifts, hydraulic systems, etc), or any other chemical hazards (past or present)? Mr Hunter felt there could be ACM material in the insulation on some of steam pipes in the building (in late 1970's asbestos removal and PCB removal activities were performed) as per interviewee Mr Hunter also said that lead and PCBs could be in the paint used to paint the building As per interviewee, lead bricks were routinely used for shielding in most lab areas of B881 Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)

Did any spills or uncontrolled release of radioactive materials or chemicals occur while you worked in the building? If so, what types, quantities, and where? Interviewee said many chemical spills occurred in B881 and a chemical spill of methylene chloride also occurred on the South Dock of B881 Interviewee said, historically radioactive spills may have occurred in B881, but all of the radioactive uranium recovery and processing equipment was already removed prior to interviewee's time in B881 Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)

Were these spills/releases cleaned up or mitigated? If so, how, and to what extent?
No radioactive spills/releases were cleaned up during the interviewees association with this building Mr Hunter said chemical spills were cleaned up using approved methods (neutralizing and/or water flushing as necessary)

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Do you know of any additional issues, concerns, or process knowledge that could affect facility characterization? Interviewee did not know of any other concerns or process knowledge that could affect facility characterization Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)

Prepared By Bob Sheets / Bob Sheets / 5/30/2001
Print Name Signature Date

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Facility ID: Building 881 Cluster Facilities, which includes B881, B881C Cooling Tower, B881F Filter Plenum, B881G Emergency Generator, B881H Electrical Equipment, B881/B883 Tunnel, B830 Isolated Power, B882 Pad, B885 Paint & Oil Storage, B887 Sanitary & Process Waste Lift Station, B890 Cooling Tower Pump House, B890 Pad, B881 Stacks S-1, S-2, and S-3, B881 Cluster Exterior Tanks TK66 Diesel Storage, Tank 002 Steel Fuel Tank, Tank 013 Concrete Foundation Drain

Anticipated Facility Type (1, 2, or 3) B881 = Type 2, B881C = Type 1, B881F= Type 2, B881G – Type 1, B881H = Type 1, B881/B883 Tunnel = Type 2, B830 = Type 1, B882 Pad = Type 1, B885 = Type 1, B887 = Type 2, B890 = Type 1, B890 Pad = type 1, B881 Stacks S-1 = Type 2, S-2 = Type 2, and Stack S-3 = Type 2, B881 Cluster Exterior Tanks TK66 = Type 1, Tank 002 = Type 1, Tank 013 = Type 2

This facility specific Historical Site Assessment (HSA) – Interview Checklist has been conducted in accordance with
D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Personnel Interviewed (Name, Title, and Function)
Dean A Burton, Lab Technician, ran routine and non-routine lab analyses, and operated lab analyzing equipment

What time frame did the interviewee work in the facility? What was his/her function(s)?
Mr Burton worked in the B881 Analytical Labs from 1953 until 1956 as Lab Technician,

Has the building configuration changed since you worked in the building (e g , rooms & equipment)? Have there been any building renovations? If so, in what way?
Yes, B881 has changed very much since Mr Burton first started working in the facility Mr Burton said that most of the labs remain, but all of the uranium process equipment has been stripped out Mr Burton said that B881 has a Chem Lab, a Standards Lab, an Emission Spec Lab, and a Mass Spec Lab Mr Burton did not remember all the room numbers, but he did remember Rooms 101, 104, 137, and Room 227 and the Labs rooms east of the main north-south hallway which is the Room 260/266/270 area

What operations/processes were conducted in the building during the interviewee's time in the facility?
Mr Burton said that historically various types of analytical sample analyses were performed, including Pu, U, Am, U-233, U-235, U-238, U-239, and Be as he recollects Mr Burton said he remembered the following B881 uranium recovery processes Waste Liquid Recovery Operations (with waste liquids being shipped to B774), Uranium Peroxide Precipitation, Uranium Calcination, Uranium Fluorination, Uranium Bomb Reduction ($UF_4 \rightarrow$ U Metal Buttons), Sand/Slag/Crucible Uranium Residue Dissolution, and Uranium Solvent Extraction which covered the west side of B881 on all floors and Mezzanines Mr Burton said that the Uranium Foundry and Uranium Machining Operations were in the rooms on the north end of the Second Floor of B881, but he did not remember the room numbers

What types of equipment were used, and where was the equipment located? (specific rooms/areas)
Mr Burton said that all types of lab hoods and lab analysis equipment were used both in the downstairs General Labs (Room 137) and the Chemistry Labs on the east side of the north/south hallway on the second floor As for the uranium processing, as stated above, but Mr Burton did not remember the room numbers

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Were any radioactive materials or equipment handled in the building (e g , wastes, residues, product, feed material, sealed radioactive sources)? If so, what types and where? Mr Burton said that yes historically B881 handled Pu, Am U-233, U-235, U-238, and U-239, but Mr Burton said the other B881 Cluster Facilities did not handle radioactive materials The B881 Analytical Labs would have handled all of these same elements in the form of analytical samples and routinely performed U and Pu isotopic analysis Mr Burton said that enriched and depleted U parts were routinely moved back and forth through the B881/883 Tunnel for processing such as rolling and part punching Final processing and machining of uranium parts was done in B881 as per Mr Burton
Were there any Research & Development area (past or present) located in the facility or area? If so, where? Yes, Mr Burton said R&D cold testing of pumps, sampling equipment, etc was routinely performed in the R&D Lab areas of B881 Mr Burton remembered R&D Analysis Development work activities were performed in B881 Mr Burton said that at the present time he did not think any R&D work was being done in B881 When asked about "Pure Beta Emitters" and/or "Mixed Fission Product" in B881, interviewee Mr Burton said sealed sources were used and stored in B881 Mr Burton said he thought that Cobalt 60 was one of the sources used in B881, but he does not remember what the others were
Were any chemicals (e g , Beryllium, RCRA/CERCLA Constituents, PCBs, etc) handled in the building? If so, what types and where? Yes, as per interviewee Mr Burton, routine U, Pu, Am, U233, U235, U238, U239, and Be samples were analyzed in the B881 Labs Various rooms in B881 contained Be standards, Be metal, Be oxide, Be waste solutions, and U, Pu, Am, U233, U235, U238, and U239 waste solutions (acids and bases) Mr Burton said he remembered metal plating process (copper and chrome) in B881, which used cyanide solutions Mr Burton did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks) Mr Burton said that the Analytical Lab used all kinds of analytical chemicals Mr Burton said that the labs frequently worked with a lot of mercury in Rooms 101 and 104
Were there any Asbestos Containing Materials (e g , transite wall board, ceiling tiles, floor tile), lead shielding, equipment utilizing PCB oils (e g , process equipment, lifts, hydraulic systems, etc), or any other chemical hazards (past or present)? Mr Burton felt there could still be ACM material in the insulation on the some of the steam pipes in the building Mr Burton also said that lead and PCBs could be in the paint used in B881 Mr Burton said lead bricks were routinely used for shielding in most lab areas of B881 Mr Burton said that the Labs used asbestos rope and asbestos blankets for sealing and covering their analytical furnaces Mr Burton said that many of the Labs and Lab Offices had suspect asbestos floor tiles Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)
Did any spills or uncontrolled release of radioactive materials or chemicals occur while you worked in the building? If so, what types, quantities, and where? Mr Burton said "yes" lots of chemical and radioactive spills occurred in B881 Mr Burton remembered spills of uranium nitrate, nitric acid, and Carbitol Solvent used in the Solvent Extraction Process Interviewee did not have any information on the other B881 Cluster Facilities (buildings or exterior tanks)
Were these spills/releases cleaned up or mitigated? If so, how, and to what extent? Mr Burton spills were cleaned up using the standard clean up methods (soap, detergent, water, and lots of scrubbing)

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D&D RISS Facility Characterization
Historical Site Assessment - Interview Checklist

Do you know of any additional issues, concerns, or process knowledge that could affect facility characterization? Mr Burton said he was concerned about the mercury spills on the Lab floors Mr Burton also remembered a mercury spill in Room 101, which could still have residual mercury (which would be under the existing Computer Room Raised Floor) Mr Burton said he was also concerned about the perchloric acid and perchlorates in the Lab hood exhaust ducts, which still remain Interviewee did not have any information on the other B881 Cluster Facilities (exterior buildings or exterior tanks)

Prepared By Bob Sheets / Bob Sheets / 5/30/2001 /
Print Name Signature Date

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ATTACHMENT C

Radiological/Beryllium Characterization Package

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Rocky Flats Environmental Technology Site

RECONNAISSANCE LEVEL CHARACTERIZATION

RADIOLOGICAL / BERYLLIUM CHARACTERIZATION PLAN (PACKAGE)

B881 CLUSTER PROJECT
(B881, B887, B881F, Stack 1, Stack 2, & Stack 3)

REVISION 2

August 28, 2001

Prepared by: Jay M Britten Date 8/28/01
Jay Britten, Radiological Engineer

Prepared by: David Babbs Date 8/28/01
David Babbs, Industrial Hygiene & Safety

Reviewed by: Duane Parsons Date 8/28/01
Duane Parsons, Facility Characterization Coordinator

Reviewed by: Paul E Miles Date 8/29/01
Paul Miles, Quality Assurance

Approved by: K D Dorr Date 8/30/01
Kent Dorr, Closure Project Facility Manager

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RLC Radiological/Beryllium Characterization Plan (Package)
B881 Cluster Project
(B881, B887, B881F, Stack 1, Stack 2, & Stack 3)

Notes and Assumptions

- This characterization package was prepared in accordance with MAN-077-DDCP, D&D Characterization Protocols, and Appendix D, Reconnaissance Level Characterization Plan for D&D Facilities, latest versions
- RLCP Data Quality Objectives were used to develop this characterization package
- Some interior facility characterization data of 881 already exists, only RLC data gaps are specified in this characterization plan The RLCR will report both existing data and newly acquired RLC data, as necessary Interior facility characterization surveys of 887 will be obtained Exterior facility characterization surveys of the 881 Cluster will be obtained by the D&D Program Office as part of a site-wide Technical Basis Document development effort The 881 Cluster exterior facility characterization survey results will also be reported in the 881 Cluster RLCR
- It is assumed that all facility systems are potentially contaminated and will be disposed of as LLW or LLMW Therefore, only exterior surfaces of facility system piping, ducting, conduit, equipment, etc will be considered during the RLC
- It is assumed that all painted surfaces in potential MARSSIM Class 1 and Class 2 PDS survey areas will either be stripped or disposed of as LLW or LLMW during in-process D&D work Therefore, media and volumetric sampling will not be considered during the RLC
- Only facilities that are anticipated to be Type 2 facilities (B881, B887, B881F, Stack 1, Stack 2, & Stack 3) were considered in this RLC Plan Anticipated Type 1 facilities (B881C, B881G, B881H, B881 Tunnel, B890, Tank 66, & Tank 002) will be characterized as part of the Pre-demolition Survey Plan for the cluster

Precautions

1 If characterization will be performed in area where animals/insects, (e g spiders, snakes, bees) could be present, then remind personnel at job task brief to be careful when reaching or entering spaces where animals/insects could be present
2 If characterization will be performed in area where animal droppings could be present, then remind personnel at job task brief to not come in direct contact with animal droppings If excessive droppings are present, contact IH&S prior to entering to determine if respirator is required Even if not required, respirators may be worn, as determined by the worker

Instructions

3 Verify characterization activities are on the Plan-of-the-Day (POD)

4 Perform a Pre-Evolution Brief and/or Job Task Brief in accordance with the Site Conduct of Operations Manual, MAN-066-COOP

5 Verify personnel have appropriate training for the applicable tasks they will be performing

6 Comply with RWP, ALARA Job Review, Beryllium Work Form (BWF) requirements, and Confined Space Entry requirements, if applicable

7 Comply with JHA and facility PPE requirements, as applicable

8 Inform the Facility Manager, or designee prior to starting characterization activities

9 Follow applicable characterization and sampling procedures

10 Prior to entry into Consent Order Rooms, ensure that the proper notifications have been made (i e, Facility Management, DOE, CDPHE, etc) Ensure appropriate approvals are documented along with any special requirements

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11 Craft personnel perform the following tasks as directed by RCT, IH, and ASD personnel for sampling execution RCT, IH, and ASD personnel obtain samples when access accomplished

- Lift deck plates/ grating and access covers to obtain samples in floor drains, trenches, pits & sumps Use forklift with approved lift attachment, as necessary Obtain samples
- Use a sawsall to cut deck grating and access covers to obtain samples in trenches, pits & sumps Obtain samples
- Access ventilation ducts for sampling, including entry into fan plenum Use of ladders & scaffolding may be required Obtain samples
- Access bottom elevator shafts for sampling Obtain samples
- Access Stack S3 Entry is <u>non permit-required</u> confined space
  1) Use Man-lift to access the cover
  2) Use smoke tube, or equivalent, to ensure inward airflow when loosening the access cover bolts
  3) RCT survey for radiological contamination during access cover removal
  4) Stop work if outward airflow or unexpected radiological contamination is found
  5) Use Digger Derrick with a strap attached to the access cover, and prevent the cover falling or creating a cutting hazard
  6) When removing and disposing access cover gasket.
     a) Use wet methods
     b) Use qualified asbestos workers
     c) Minimum PPE requirements include respirator, tyvek coveralls, gloves, and boots
     d) Follow the requirements for Class II asbestos work per the OS&IH PM Chapter 19, Asbestos Management Program
  7) Obtain samples
- Access S2 to obtain samples Entry is <u>permit-required</u> confined space
  1) Obtain and comply with requirements of confined space entry permit in accordance with requirements of OS&IH PM Chapter 21, Confined Space Entry Program
  2) Use smoke tube, or equivalent, to ensure inward air flow when loosening the access cover bolts
  3) RCT to survey for radiological contamination during access cover removal
  4) Stop work if outward air flow or unexpected radiological contamination is found
  5) Use Digger Derrick with a strap attached to the access cover, to prevent the cover falling or creating a cutting hazard
  6) Obtain samples
- Access Stack S1
  1) Obtain and comply with requirements of confined space entry permit in accordance with requirements of OS&IH PM Chapter 21, Confined Space Entry Program
  2) Obtain samples
- Remove floor covering (e g carpeting, and plywood, floor tiles) to sample floors
  1) Prior to removing floor tiles or any other floor coverings suspected of containing asbestos, ensure sampling has been performed, or IH concurrence has been obtained that asbestos removal is not required, per OS&IH PM Chapter 19 Asbestos Management Program
  2) If asbestos is present, then initiate another work package for removal of asbestos containing floor covering per OS&IH PM Chapter 19 Asbestos Management Program
- Cut stainless steel flooring to sample flooring
  1) Required minimum PPE for cutting hole in stainless steel floor is as follows class I eye protection or respirator, leather gloves, long sleeve shirt, and safety shoes Additional PPE may be required in the applicable RWP or through the IS&H representative
  2) To allow characterization of the surface below the stainless steel floor, cut holes in the stainless steel floor Make initial cut of stainless steel floor using circular saw or grinder Worker should attempt to not completely cut through the stainless flooring The cut will be completed using a cold chisel A nibbler may also be used to complete the cut, as necessary
  3) After the hole is made in the stainless using the appropriate method, RCT SHALL check the hole for contamination to determine if contamination levels warrant additional radiological controls prior to proceeding with the chisel/nibbler
     If acceptable contamination levels are confirmed, then cut the hole to approximately 5"X 8"
  4) Engineered Control - Establish airflow across the floor area being cut using a portable air mover with HEPA filter A three-sided shroud will be used to divert the cutting debris toward a flexible air duct, which will be placed through a hole in the shroud in front of the cut.
  5) Prior to performing a cut using the applicable cutting method for the first time, a test cut on clean stainless flooring shall be performed using established protocol IH&S and Radiological Engineering SHALL be present to determine if any changes to the RWP/BWF are required prior to proceeding This test cut SHALL be performed again if the method of cutting the stainless floor is altered

12 Notify Wackenhut Security (x2444) and the Shift Supervisor (x2914), and verify appropriate safety precautions/requirements are followed prior to accessing facility roofs

13 Coordinate with the Environmental Restoration Program organization to further characterize underneath facility foundations and slabs prior to removal

14 Collect and maintain all characterization paperwork in the Project File(s)

15 All radiological surveys shall be conducted in accordance with the sampling and instruction forms included in 881Cluster Survey Area Packages Sample locations are denoted on maps attached to each survey area package

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RLC Radiological/Beryllium Characterization Plan (Package)

B881 Cluster Project

(B881, B887, B881F, Stack 1, Stack 2, & Stack 3)

Non-Contamination Areas, Buffer Areas, and RMAs

Survey Area	Description	Floor m^2	Scan m^2	TSA	Smears	Media
M	B887 (Interior)	144	30 (minimum)	70 (minimum)	70 (minimum)	N/A
	Totals	144	30 (minimum)	70 (minimum)	70 (minimum)	N/A

* A minimum of 70 TSA's/RSC's are required in this survey area (based on floor m^2), however, additional measurements may be required to adequately characterize all areas

Note 1) All removable surface contamination measurements shall be analyzed for isotopic constituents to determine contaminant(s) of concern

2) 1 m^2 scan surveys shall be conducted at survey measurement locations on the floor and walls below 2 meters No scanning above 2 meters is required unless contamination is discovered from surface activity measurements

3) Floor m^2 are conservatively estimated values to ensure proper sample locations to meet minimum RLCP requirements, as applicable

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RLC Radiological/Beryllium Characterization Plan (Package)

B881 Cluster Project

(B881, B887, B881F, Stack 1, Stack 2, & Stack 3)

Contamination Areas and Fixed Contamination Areas						
Survey Area	**Description**	**Floor m^2**	**Scan m^2**	**TSA**	**Smears**	**Media**
G	Stack 1, Stack 2, & Stack 3 (Interiors)	40	30	30 (minimum)	30 (minimum)	N/A
H	881 Trenches, Sumps, Pits, & Elevator Shafts	100	30 (minimum)	30 random (minimum)	30 random (minimum)	N/A
I	881 Stainless Steel Floor Areas	3,014	N/A	30 random plus biased (minimum)	30 random plus biased (minimum)	N/A
J *	B881 Data Gap Rooms (1st Floor Un-surveyed Rooms)	2,817	90 (minimum)	205 (minimum)	205 (minimum)	N/A
K **	B881 Data Gap Rooms (2nd Floor Un-surveyed Rooms)	4,143	125 (minimum)	285 (minimum)	285 (minimum)	N/A
L ***	Consent Order Rooms (Rm 15A, 114A, 127A, Rm 137 Cabinet, & Two Cabinets in Rm 233)	280	30 (minimum)	70 (minimum)	70 (minimum)	N/A
	Totals	10,394	275	650	650	N/A

* A minimum of 205 TSA s/RSC's is required in this survey area (based on floor m^2), however, additional measurements may be required to adequately characterize all areas

** A minimum of 285 TSA's/RSC's is required in this survey area (based on floor m^2), however, additional measurements may be required to adequately characterize all areas

*** A minimum of 70 TSA's/RSC's is required in this survey area (based on floor m^2), however, additional measurements may be required to adequately characterize all areas

Note 1) All removable surface contamination measurements shall be analyzed for isotopic constituents to determine contaminant(s) of concern

2) 1 m^2 scan surveys shall be conducted at survey measurement locations on the floor and walls below 2 meters No scanning above 2 meters is required unless contamination is discovered from surface activity measurements

3) Floor m^2 are conservatively estimated values to ensure proper sample locations to meet minimum RLCP requirements, as applicable

RLC Radiological/Beryllium Characterization Plan (Package)

B881 Cluster Project

(B881, B887, B881F, Stack 1, Stack 2, & Stack 3)

Beryllium Survey Areas

Survey Area	Description	Floor ft^2	Smears
G	Stack 1, Stack 2, & Stack 3 (Interiors)	430	10 (minimum)
H	881 Trenches, Sumps, Pits, & Elevator Shafts	1,075	11 (minimum)
I	881 Stainless Steel Floor Areas	32,409	30 random, plus biased (minimum)
J	B881 Data Gap Rooms (1st Floor Unsurveyed Rooms)	30,290	75 (minimum)
K	B881 Data Gap Rooms (2nd Floor Unsurveyed Rooms)	44,548	75 (minimum)
L	Plenums 162 & 163 and Consent Order Rooms (Rm 15A, 114A, 127A, Rm 137 Cabinet, & Two Cabinets in Rm 233)	3,011	21 (minimum)
M	887 (Interior)	1,548	10 (minimum)
	Totals	113,311	232 (minimum)

Note A minimum of 232 beryllium samples is required in these survey areas (based on floor ft^2), however, additional measurements may be required to adequately characterize all areas

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ATTACHMENT D

Chemical Characterization Package

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Rocky Flats Environmental Technology Site

RECONNIASSINACE LEVEL CHARACTERIZATION

CHEMICAL CHARACTERIZATION PLAN (PACKAGE)

881 CLUSTER CLOSURE PROJECT

(Buildings: 881, 881F, 887, S1, S2, S3)

REVISION 0

September 24, 2001

Prepared by: David Babbs **Date:** 9/25/01
David Babbs, Industrial Hygiene

Prepared by: CC Albin **Date:** 9/26/01
Chuck Albin, Environmental Compliance

Reviewed by: Paul C. Miles **Date:** 10/2/01
Paul Miles, Quality Assurance

Reviewed by: **Date:** 10/2/01
Duane Parsons, Characterization Coordinator

Approved by: Kent A. Dorr **Date:** 10/2/01
Kent Dorr, KH Closure Project Manager

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KAD
UNU
10/2/01

RLC CHEMICAL CHARACTERIZATION PLAN (PACKAGE)

BUILDING(s): 881, 881F, 887, S1, S2, S3

Assumptions and Notes:

- This characterization package was prepared in accordance with MAN-077-DDCP, D&D Characterization Protocols, and Appendix D, Reconnaissance Level Characterization Plan for D&D Facilities, April 23, 2001
- RLCP Data Quality Objectives were used to develop this characterization package
- Data already exists for some contaminants of concern, only RLC data gaps are specified in this characterization plan If areas are discovered during the removal of plates, covers, etc as the RLC progresses, these areas will be sampled as required The 881 Cluster RLCR will report both existing data results and newly acquired RLC data results
- Components of RCRA Units were not considered within the scope of this RLC Plan since they are covered under the RCRA Closure Program All RCRA permitted units in B881 and B887 have been characterized by the permitting process (i e , approved waste codes) All RCRA units that have not been previously closed, will be closed in accordance with closure requirements specified in the Closure Plan, Section X, of the RCRA Part B Permit, which are also delineated in the RFCA RSOP for Component Removal, Decontamination and Size Reduction Therefore, no additional chemical sampling is required for characterization of RCRA units and their components
- It is assumed that demolition debris will either be disposed of as PCB Bulk Product Waste or sampled during in-process characterization once site protocols are established based on current discussions with the Lead Regulatory Agencies concerning Building 111 Therefore painted concrete surfaces will not be sampled for PCBs in paint during the RLC If it is later determined that concrete demolition debris will be used for onsite recycled fill material, then additional PCB sampling will take place during in-process characterization
- Lead sampling is not required in the 881 Cluster All paint will remain a part of the infrastructure during demolition and therefore does not require sampling per Environmental Waste Compliance Guidance No 27, Lead Based Paint (LBP) and LBP Debris Disposal Sampling for lead for IH requirements will be at the discretion of the demolition contractor.
- It is assumed that all potential materials that could contain ACM in these buildings do contain ACM, therefore no additional asbestos sampling will be performed
- It is assumed that all facility systems are potentially contaminated and will be disposed of as LLW or LLMW and will not affect the facility typing determination Therefore, only exterior surfaces of facility system piping, ducting, conduit, plenums, equipment, etc will be considered during the RLC
- Only facilities that are anticipated to be Type 2 facilities (i e , 881, 887, 881F, Stacks S1, S2 and S3) were considered in this RLC Plan Anticipated Type 1 facilities (i e , 881C, 881G, 881H, 881 Tunnel, and 890) will be characterized as part of the Type 1 facility RLC/PDS effort later in the project schedule
- Beryllium characterization sample efforts are detailed in the 881 Cluster Radiological/Beryllium characterization plan

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Instructions:

1. Verify characterization activities are on the Plan-of-the-Day (POD).
2 Perform a Pre-Evolution Brief and/or Job Task Brief in accordance with the Site Conduct of Operations Manual
3 Verify personnel have appropriate training for the applicable tasks they will be performing
4 Comply with RWP and Beryllium Work Form (BWF) requirements, if applicable
5 Comply with facility PPE requirements, as applicable
6 Inform the Facility Manager, or designee prior to starting characterization activities

WARNING
Confined space entry is NOT authorized during the performance of this plan (package)

7. Follow applicable characterization and sampling procedures
8 Have D&D craft perform the following, as required.
   - Lift deck grating and access covers to assist in obtaining samples in trenches, pits and sumps Use forklift with approved lift attachment, as necessary
   - Cut (using sawsall) deck grating and access covers, if necessary, to assist in obtaining samples in trenches, pits & sumps
   - Assist in accessing ventilation ducts for sampling, including removal of duct tape over the ends of ventilation pipes and entry into fan plenum(s)
9 Notify Wackenhut Security (x2444) and the Shift Supervisor (x2914), and verify appropriate safety precautions/requirements are followed prior to accessing facility roofs
10 Have ASD sampling personnel assist in collecting concrete core samples Prior to core sampling a utility locate shall be performed by qualified personnel If the utility locate is satisfactory and coring is authorized, then the utility locate performer shall sign below
11 Coordination with the Environmental Restoration Program organization will be required to further characterize soils around and underneath facility foundations and slabs prior to removal
12 Collect and maintain all characterization paperwork in the Characterization Closure Project File(s), and all electronic data in the appropriate D&D RISS subdirectory

Print and Sign _________________/____________________ Date ________

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ASBESTOS		
Sample Location	**Number of Samples**	**Sample location and justification/rational**
881, 887, 881F, and Stacks S1, S2 and S3	0	It is assumed that all potential materials that could contain asbestos in 881, 887, 881F, and Stacks S1, S2 and S3 do contain asbestos, therefore no additional asbestos sampling will be performed in these facilities
Total Samples	0	

RCRA/CERCLA CONSTITUENTS		
Sample Location	**Number of Samples**	**Sample location and justification/rational**
B881	6 plus 2 duplicates	Building 881 has been used for all types of machining and manufacturing activities including special developmental projects Many floor surfaces are covered with stainless steel to allow spill cleanup and no samples will be taken If areas are discovered during removal of the stainless, additional sampling may by required Based on the 881 HSAR and facility walkdowns, the areas to be sampled during RLC efforts are as follows. NOTE samples for metals will be for total and TCLP. <u>Room 10B</u> – one concrete core sample (3 inch diameter, 2 inches deep) for metals This area contained a UPS battery system that was known to leak <u>Room 15</u> – one concrete core sample (3 inch diameter, 2 inches deep) where the process waste line exits the building to 887 Analyze for metals, VOAs, and semi-VOA <u>Room 113</u> – one concrete core sample (3 inch diameter, 2 inches deep) where the lathes were located This area would have used solvents and was prone to spills Analyze for metals, VOA, semi-voa, and PCB <u>Room 143</u> – one concrete core sample (3 inch diameter, 2 inches deep) where the lathes were located This area would have used solvents and was prone to spills Analyze for metals, VOA, semi-voa, and PCB <u>Room 160</u> – one concrete core sample (3 inch diameter, 2 inches deep) where the power hacksaw was located This area would have used solvents and was prone to spills Analyze for metals, VOA, semi-voa, and PCB <u>Room 168</u> – one concrete core sample (3 inch diameter, 2 inches deep) sample where there is evidence of spilled machine oil and turnings Analyze for metals, VOA, semi-VOA, and PCBs
881	3 plus 1 duplicate	<u>3 Elevator pits</u> – Sample sludge for metals, VOA, semi-VOA, and PCBs
B881F and 887	0	Based on historical process information, no unremediated spills are known to have occurred in these buildings and visual observation of accessible areas indicated no evidence of spills (e g , staining) Therefore, no RLC sampling locations were identified in these buildings at this time
Stacks S1, S2, S3	0	Based on historical process information, no unremediated spills are known to have occurred in these buildings and visual observation of accessible areas indicated no evidence of spills (e g , staining) Therefore, no RLC sampling locations were identified in these buildings at this time
Total Samples	12	Samples will be obtained at locations specified on sample map(s) in accordance with PRO-488-BLCR, Bulk Solids and Liquids Characterization Procedure Samples shall be analyzed for all toxicity characteristic contaminates (40 CFR 261 24, Table 1)

81

PCBs		
Sample Location	**Number of Samples**	**Sample location and justification/rational**
881 Cluster	7 plus 2 duplicates	Sample locations in rooms 113, 143, 160, 168, and the three elevator pits as described above The same concrete core sample (3 inch diameter, 2 inches deep) taken above will also be analysed for PCBs
Total Samples	9	Samples will be obtained at locations specified on sample map(s) in accordance with PRO-488-BLCR, Bulk Solids and Liquids Characterization Procedure Samples shall be analyzed for PCB characteristic contaminates

* PCB ballasts, fluorescent light bulbs, potential mercury switches in thermostats, and mercury vapor light bulbs will be identified and removed prior to demolition

82

PCBs		
Sample Location	**Number of Samples**	**Sample location and justification/rational**
881 Cluster	7 plus 2 duplicates	Sample locations in rooms 113, 143, 160, 168, and the three elevator pits as described above. The same concrete core sample (3 inch diameter, 2 inches deep) taken above will also be analysed for PCBs
Total Samples	9	Samples will be obtained at locations specified on sample map(s) in accordance with PRO-488-BLCR, Bulk Solids and Liquids Characterization Procedure Samples shall be analyzed for PCB characteristic contaminates

* PCB ballasts, fluorescent light bulbs, potential mercury switches in thermostats, and mercury vapor light bulbs will be identified and removed prior to demolition

83

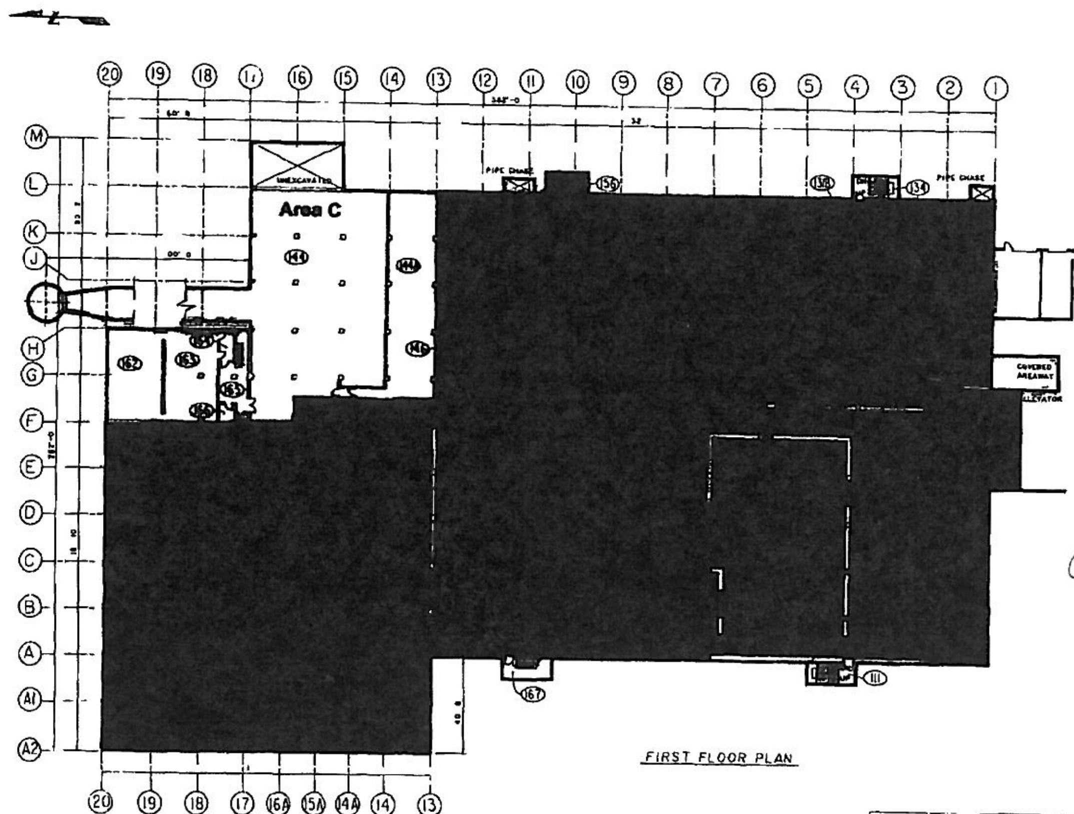
ATTACHMENT E

Radiological Data Summaries and Survey Maps

ATTACHMENT E-1

Baseline Survey Data Summaries

85



FIRST FLOOR PLAN

LEGEND

EXTERIOR WALL
CONCRETE WALL
CONCRETE BLOCK WALL
PARTITION WALL
WIRE PARTITION
ROOM NUMBER
EXTERIOR DOOR NUMBER

NOTE

DOES NOT CONTAIN UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION

Reviewing Official: J. A. NESHEIM EMCBC
Class'n Office Name
Date: 10-09-09

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KEY PLAN

FIRST FLOOR PLAN

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86

BLDG: *881* **FLOOR:** *First* **Survey Area:** *A* **Floor Area:** *852 m2*

	<2 meters		>2 meters		Equipment	

Alpha TSAs

	<2 meters		>2 meters		Equipment	
Number of Alpha TSA Samples	264		75		182	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

	<2 meters		>2 meters		Equipment	
Number of Beta TSA Samples	264		75		182	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	17909		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	2		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

	<2 meters		>2 meters		Equipment	
Number of Alpha Smear Samples	264		75		182	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	12		21		18	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

	<2 meters		>2 meters		Equipment	
Number of Beta Smear Samples	264		75		122	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	24		15		30	
Number of Beta Smears >1,000 dpm/100cm^2						
Number of Beta Smears >100,000 dpm/100cm^2						

Alpha Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

	<2 meters		>2 meters		Equipment	
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	1		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

BLDG: *881* **FLOOR:** *First* **Survey Area:** *B* **Floor Area:** *1041m2*

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	343		175		90	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	6,667		2,000,000		55,500	
Number of Alpha TSA Samples >5000 dpm/100cm^2	1		28		4	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

Number of Beta TSA Samples	343		175		90	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	455		<MDA		303	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

Number of Alpha Smear Samples	438		290		171	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	33		55,000		255	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

Number of Beta Smear Samples	438		290		171	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	63		33		150	
Number of Beta Smears >1,000 dpm/100cm^2						
Number of Beta Smears >100,000 dpm/100cm^2						

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)	-					
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	1		36		10	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		8		0	

86

BLDG: 881 FLOOR: First Survey Area: C Floor Area. 992m2

	<2 meters		>2 meters		Equipment	

Alpha TSAs

	<2 meters		>2 meters		Equipment	
Number of Alpha TSA Samples	232		51		42	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	111,100		139		222	
Number of Alpha TSA Samples >5000 dpm/100cm^2	22		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

	<2 meters		>2 meters		Equipment	
Number of Beta TSA Samples	232		51		42	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

	<2 meters		>2 meters		Equipment	
Number of Alpha Smear Samples	303		51		42	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	90		15		9	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

	<2 meters		>2 meters		Equipment	
Number of Beta Smear Samples	303		51		42	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	78		30		33	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

	<2 meters		>2 meters		Equipment	
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	16		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	1		0		0	

89

BLDG: *881* **FLOOR:** *First* **Survey Area:** *D* **Floor Area: 1030m2**

	<2 meters		>2 meters		Equipment	
Alpha TSAs						
Number of Alpha TSA Samples	92		50		51	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	5,361		11,222		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	1		2		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	
Beta TSAs						
Number of Beta TSA Samples	92		50		51	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	
Alpha Smears						
Number of Alpha Smear Samples	92		50		51	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	66		60		6	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	
Beta Smears						
Number of Beta Smear Samples	92		50		51	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	57		45		54	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	
Alpha Scans						
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						
Beta Scans						
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						
Contaminated Surface Area						
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	2		4		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

90

BLDG: *881* **FLOOR:** *First* **Survey Area:** *E* **Floor Area:** *1037*m2

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	308		71		31	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	<MDA		6,694		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		1		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

	308		71		31	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

Number of Alpha Smear Samples	308		71		31	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	9		36		12	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

30	88		71		31	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	42		39		21	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	0		1		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

BLDG: *881* **FLOOR:** *First* **Survey Area:** *F* **Floor Area:** *1037* **m2**

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	42		15			
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA			
Maximum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA			
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0			
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0			

Beta TSAs

	42		15			
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA			
Maximum Beta TSA Value (dpm/100cm^2)	8,333		<MDA			
Number of Beta TSA Samples >5000 dpm/100cm^2	1		0			
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0			

Alpha Smears

Number of Alpha Smear Samples	42		15			
Minimum Alpha Smear Value (dpm/100cm^2)	0		0			
Maximum Alpha Smear Value (dpm/100cm^2)	63		3			
Number of Alpha Smears >1,000 dpm/100cm^2	0		0			
Number of Alpha Smears >100,000 dpm/100cm^2	0		0			

Beta Smears

Number of Beta Smear Samples	42		15			
Minimum Beta Smear Value (dpm/100cm^2)	0		0			
Maximum Beta Smear Value (dpm/100cm^2)	21		9			
Number of Beta Smears >1,000 dpm/100cm^2	0		0			
Number of Beta Smears >100,000 dpm/100cm^2	0		0			

Alpha Scans

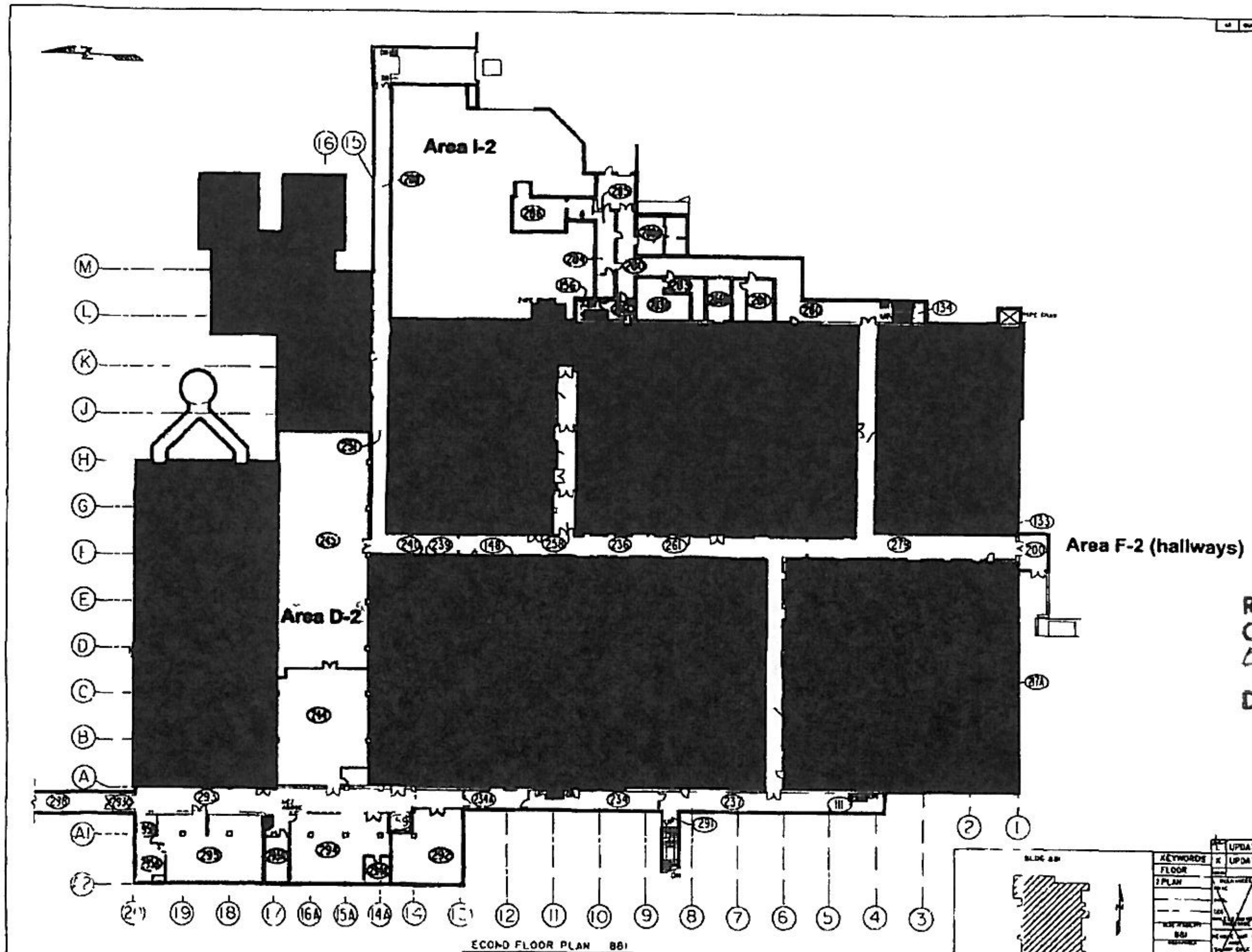
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	1		0			
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0			



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Reviewing Official: J. A. NESHEIM

EMCBC Classin **Name** Office

Date: 10-09-08

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SECOND FLOOR PLAN

D 30881-4 L

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93

BLDG· *881* FLOOR: *2nd* Survey Area: *A2* Floor Area: *1100*m2

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	223		136		146	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	1275		1700		3895	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

Number of Beta TSA Samples	223		136		146	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

Number of Alpha Smear Samples	223		136		146	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	15		120		15	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

Number of Beta Smear Samples	223		136		146	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	66		57		57	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	0		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

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BLDG: *881* **FLOOR:** *2nd* **Survey Area:** *B2* **Floor Area:** *1022*m2

	<2 meters		>2 meters		Equipment	
Alpha TSAs						
Number of Alpha TSA Samples	241		178		433	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	105		40		415	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	
Beta TSAs						
Number of Beta TSA Samples	241		178		433	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	28,410		<MDA		5,682	
Number of Beta TSA Samples >5000 dpm/100cm^2	1		0		1	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	
Alpha Smears						
Number of Alpha Smear Samples	241		178		433	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	12		9		60	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	
Beta Smears						
Number of Beta Smear Samples	241		178		433	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	120		54		93	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	
Alpha Scans						
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						
Beta Scans						
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						
Contaminated Surface Area						
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	1		0		1	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

BLDG: *881* **FLOOR:** *2nd* **Survey Area:** *C2* **Floor Area:** *1070*m2

	<2 meters		>2 meters		Equipment	
Alpha TSAs						
Number of Alpha TSA Samples	111		22		135	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	3242		25		25	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	
Beta TSAs						
Number of Beta TSA Samples	111		22		135	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	8609		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	1		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	
Alpha Smears						
Number of Alpha Smear Samples	111		22		135	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	333		6		12	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	
Beta Smears						
Number of Beta Smear Samples	111		22		135	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	40		36		40	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	
Alpha Scans						
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						
Beta Scans						
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						
Contaminated Surface Area						
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	2		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

BLDG: 881 FLOOR: 2nd Survey Area· D2 Floor Area: 928m2

	<2 meters		>2 meters		Equipment	
Alpha TSAs						
Number of Alpha TSA Samples	128		37		10	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	13926		<MDA		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	4		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	
Beta TSAs						
Number of Beta TSA Samples	128		37		10	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	9654		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	
Alpha Smears						
Number of Alpha Smear Samples	128		37		10	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	90		15		9	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	
Beta Smears						
Number of Beta Smear Samples	128		37		10	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	43		21		33	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	
Alpha Scans						
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						
Beta Scans						
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						
Contaminated Surface Area						
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	4		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

BLDG: ***881*** **FLOOR:** ***2nd*** **Survey Area.** ***E2*** **Floor Area:** ***514*** **m2**

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	107		89		182	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	3030		485		600	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

Number of Beta TSA Samples	107		89		182	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	10883		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

Number of Alpha Smear Samples	107		89		132	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	81		12		15	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

Number of Beta Smear Samples	107		89		132	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	56		36		36	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	0		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

BLDG: *881* **FLOOR:** *2nd* **Survey Area:** *F2* **Floor Area:** *1143* **m2**

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	46				8	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA				<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	1362				<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0				0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0				0	

Beta TSAs

Number of Beta TSA Samples	46				8	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA				<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	1087				<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0				0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0				0	

Alpha Smears

Number of Alpha Smear Samples	114				8	
Minimum Alpha Smear Value (dpm/100cm^2)	0				0	
Maximum Alpha Smear Value (dpm/100cm^2)	6				3	
Number of Alpha Smears >1,000 dpm/100cm^2	0				0	
Number of Alpha Smears >100,000 dpm/100cm^2	0				0	

Beta Smears

Number of Beta Smear Samples	114				8	
Minimum Beta Smear Value (dpm/100cm^2)	0				0	
Maximum Beta Smear Value (dpm/100cm^2)	48				27	
Number of Beta Smears >1,000 dpm/100cm^2	0				0	
Number of Beta Smears >100,000 dpm/100cm^2	0				0	

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	0				0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0				0	

99

BLDG: *881* **FLOOR:** *2nd* **Survey Area:** *G2* **Floor Area:** *899* **m2**

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	385		53		60	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

Number of Beta TSA Samples	385		53		60	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		529		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

Number of Alpha Smear Samples	385		53		60	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	9		12		6	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

Number of Beta Smear Samples	385		53		60	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	24		49		27	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	0		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

100

BLDG: *881* **FLOOR:** *2nd* **Survey Area:** *H2* **Floor Area:** *514* **m2**

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	146		160		105	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	14,175		17,445		485	
Number of Alpha TSA Samples >5000 dpm/100cm^2	1		3		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

Number of Beta TSA Samples	146		160		105	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	4,735		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

Number of Alpha Smear Samples	146		160		105	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	87		96		27	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

Number of Beta Smear Samples	146		160		105	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	49		51		57	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	4		12		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

BLDG: *881* **FLOOR:** *2nd* **Survey Area:** *12* **Floor Area:** *955* **m2**

	<2 meters		>2 meters		Equipment	

Alpha TSAs

Number of Alpha TSA Samples	90		82		111	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

Number of Beta TSA Samples	90		82		111	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

Number of Alpha Smear Samples	90		82		111	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	42		24		12	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

Number of Beta Smear Samples	90		82		111	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	48		48		66	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

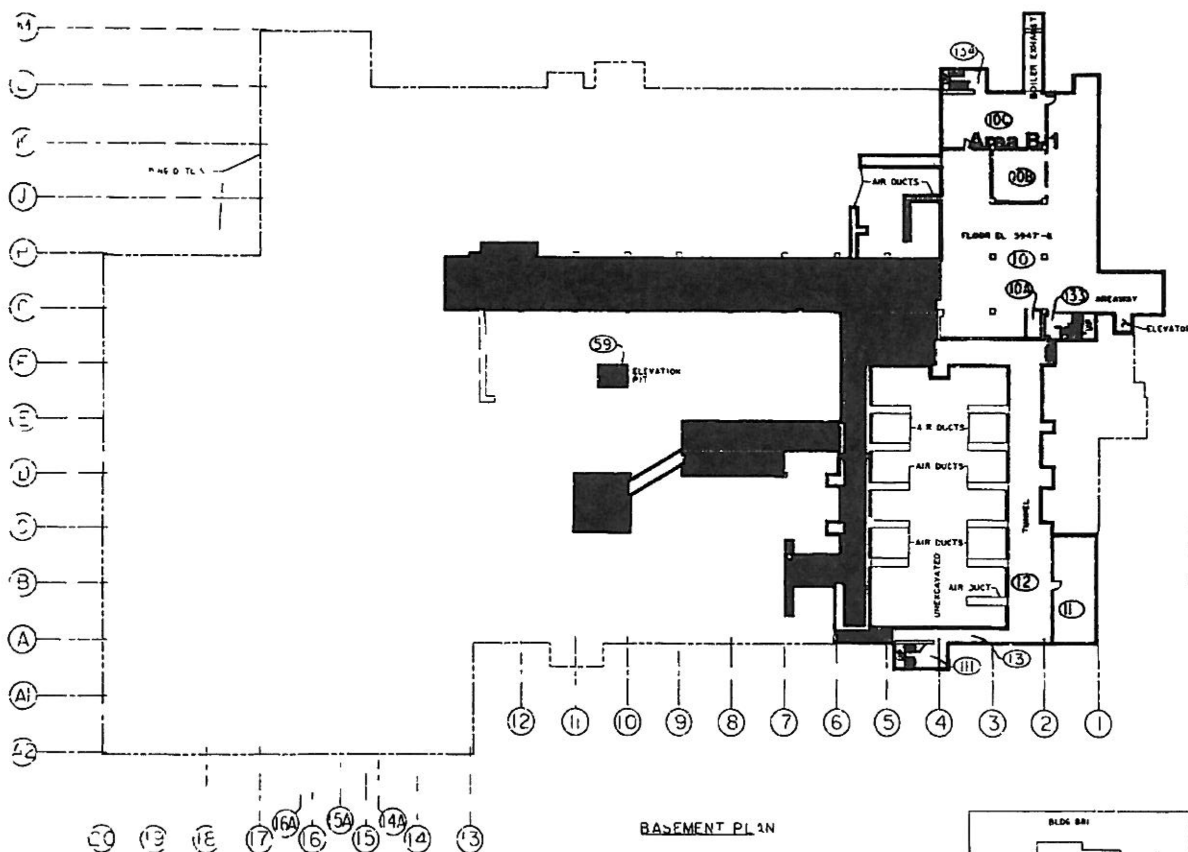
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	0		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

LEGEND

- EXTERIOR WALL
- CONCRETE WALL
- CONCRETE BLOCK WALL
- PARTITION WALL
- (XXX) ROOM NUMBER
- [XX] EXT FLOOR DOOR NUMBER



BASEMENT PLAN

F.LOOR AREAS

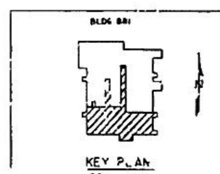
BASEMENT	11 870 SQ FT
FIRST FLOOR	86 300 SQ FT
FIRST FLOOR MEZZANINE	6 000 SQ
SECOND FLOOR	121 450 SQ FT
SECOND FLOOR MEZZANINE	11 550 SQ
TOTAL	245 160 SQ F

DOES NOT CONTAIN
UNCLASSIFIED CONTROLLED
NUCLEAR INFORMATION

Reviewing
Official: J. A. NESHEIM
EMCBC Classin Name Office
Date: 10-09-08

~~NOT FOR PUBLIC DISSEMINATION~~

FOR REFERENCE ONLY



KEYWORDS	G	UPDATED
1 FLOOR	F	UPDATED
2 PLAN		

DRAWN	PARKS	12/4/87
CHECKED		12/4/87
APPROVED	TERRIN	12/7/87

U.S. DEPARTMENT OF ENERGY
Rockwell International
BUILDING 881
BASEMENT PLAN
SCALE 1" = 20'
D130881-1 1G

RETAIN COPY
COMPUTER GENERATED
NO MANUAL CHANGES ALLOWED

103

BLDG: *881* **FLOOR:** *Bsmnt* **Survey Area:** *A1* **Floor Area:** *939* **m2**

	<2 meters		>2 meters		Equipment	

Alpha TSAs

	<2 meters		>2 meters		Equipment	
Number of Alpha TSA Samples	32		19		10	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

	<2 meters		>2 meters		Equipment	
Number of Beta TSA Samples	32		19		10	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

	<2 meters		>2 meters		Equipment	
Number of Alpha Smear Samples	32		19		10	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	12		12		9	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

	<2 meters		>2 meters		Equipment	
Number of Beta Smear Samples	32		19		10	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	30		21		30	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

	<2 meters		>2 meters		Equipment	
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	0		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

104

BLDG: ***881*** **FLOOR:** ***Bsmt*** **Survey Area:** ***B1*** **Floor Area: 1097 m2**

Alpha TSAs

	<2 meters		>2 meters		Equipment	
Number of Alpha TSA Samples	640		157		126	
Minimum Alpha TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Alpha TSA Value (dpm/100cm^2)	16,667		<MDA		<MDA	
Number of Alpha TSA Samples >5000 dpm/100cm^2	8				0	
Number of Alpha TSA Samples >500,000 dpm/100cm^2	0		0		0	

Beta TSAs

	<2 meters		>2 meters		Equipment	
Number of Beta TSA Samples	640		157		126	
Minimum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Maximum Beta TSA Value (dpm/100cm^2)	<MDA		<MDA		<MDA	
Number of Beta TSA Samples >5000 dpm/100cm^2	0		0		0	
Number of Beta TSA Samples >500,000 dpm/100cm^2	0		0		0	

Alpha Smears

	<2 meters		>2 meters		Equipment	
Number of Alpha Smear Samples	640		157		126	
Minimum Alpha Smear Value (dpm/100cm^2)	0		0		0	
Maximum Alpha Smear Value (dpm/100cm^2)	18		15		21	
Number of Alpha Smears >1,000 dpm/100cm^2	0		0		0	
Number of Alpha Smears >100,000 dpm/100cm^2	0		0		0	

Beta Smears

	<2 meters		>2 meters		Equipment	
Number of Beta Smear Samples	640		157		126	
Minimum Beta Smear Value (dpm/100cm^2)	0		0		0	
Maximum Beta Smear Value (dpm/100cm^2)	57		45		42	
Number of Beta Smears >1,000 dpm/100cm^2	0		0		0	
Number of Beta Smears >100,000 dpm/100cm^2	0		0		0	

Alpha Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Alpha Scans						
Maximum 1 Meter Alpha Scan Value (dpm/100cm^2)						
Number of 1 Meter Alpha Scans >5,000 dpm/100cm^2						
Number of 1 Meter Alpha Scans >500,000 dpm/100cm^2						

Beta Scans

	<2 meters		>2 meters		Equipment	
Number of 1 Meter Beta Scans						
Maximum 1 Meter Beta Scan Value (dpm/100cm^2)						
Number of 1 Meter Beta Scans >5,000 dpm/100cm^2						
Number of 1 Meter Beta Scans >500,000 dpm/100cm^2						

Contaminated Surface Area

	<2 meters		>2 meters		Equipment	
Estimated Surface Area (m^2) >1,000 dpm/100cm^2 removable or 5,000 dpm/100cm^2 total	8		0		0	
Estimated Surface Area (m^2) >100,000 dpm/100cm^2 removable or 500,000 dpm/100cm^2 total	0		0		0	

ATTACHMENT E-2

Stacks 1, 2, & 3 Interior Data Summary

(SURVEY AREA G)

106

RLC Survey Area G
B881 (Stack 1, Stack 2, & Stack 3) INTERIORS
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Stack 1 - Interior	3	0	11	39
2	Stack 1 - Interior	0	0	7	44
3	Stack 1 - Interior	0	28	0	29
4	Stack 1 - Interior	0	0	46	94
5	Stack 1 - Interior	3	4	29	7
6	Stack 1 - Interior	0	0	40	69
7	Stack 1 - Interior	0	4	25	49
8	Stack 1 - Interior	0	0	37	21
9	Stack 1 - Interior	0	36	26	73
10	Stack 1 - Interior	0	0	40	72
11	Stack 2 - Interior	82	7	432	0
12	Stack 2 - Interior	59	0	312	0
13	Stack 2 - Interior	25	12	450	0
14	Stack 2 - Interior	130	7	360	0
15	Stack 2 - Interior	36	10	468	353
16	Stack 2 - Interior	25	5	630	317
17	Stack 2 - Interior	13	7	612	241
18	Stack 2 - Interior	2	2	444	536
19	Stack 2 - Interior	10	10	90	925
20	Stack 2 - Interior	19	5	114	832
21	Stack 3 - Interior	0	0	24	894
22	Stack 3 - Interior	0	0	54	1155
23	Stack 3 - Interior	0	0	36	0
24	Stack 3 - Interior	0	0	36	1110
25	Stack 3 - Interior	0	0	30	0
26	Stack 3 - Interior	0	0	24	78
27	Stack 3 - Interior	0	20	18	1254
28	Stack 3 - Interior	0	0	36	1356
29	Stack 3 - Interior	6	4	24	0
30	Stack 3 - Interior	0	12	36	0
	MIN	0	0	0	0
	MAX	130	36	630	1356
	MEAN	13 8	5 8	149 7	318 3

Scan Survey Locations

* Scan locations limited due to remote survey techniques

107

ATTACHMENT E-3

B881 Trenches, Sumps, Pits, & Elevator Shafts

(SURVEY AREA H)

108

RLC Survey Area H
B881 Trenches, Sumps, Pits, & Elevator Shafts
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Room 248 Sump	<14	235	36	102
2	Room 248 Sump	5	187	N/A	N/A
3	Room 10 Trench	60	167	45	334
4	Room 10 Trench	2	279	N/A	N/A
5	Room 10 Trench	<14	255	55	669
6	Room 10 Trench	<14	207	N/A	N/A
7	Room 15 Trench	<14	207	73	1579
8	Room 15 Trench	5	139	N/A	N/A
9	Room 15 Trench	<14	171	50	2232
10	Room 15 Trench	5	259	N/A	N/A
11	Room 249B Sump	132	195	359	68
12	Room 249B Sump	17	135	N/A	N/A
13	Room 249B Sump	29	39	N/A	N/A
14	Room 249A Sump	14	183	822	640
15	Room 249A Sump	23	11	N/A	N/A
16	Room 249A Sump	14	111	N/A	N/A
17	Room 10 North Sump	23	147	<60	<397
18	Room 10 North Sump	26	59	N/A	N/A
19	Room 10 North Sump	20	167	N/A	N/A
20	Room 10 Southeast Sump	<14	<101	20	<397
21	Room 10 Southeast Sump	<14	<101	N/A	N/A
22	Room 10 Southeast Sump	<14	<101	N/A	N/A
23	Room 10 Southeast Sump	<14	<101	N/A	N/A
24	Room 10 Southeast Sump	<14	<101	N/A	N/A
25	Room 10 Southeast Sump	<14	<101	N/A	N/A
26	Room 10 Southeast Sump	<14	<101	N/A	N/A
27	NW Elevator Pit	<14	<101	77	344
28	NW Elevator Pit	<14	<101	N/A	N/A
29	Main Elevator Pit	60	60	873	14000
30	Main Elevator Pit	<14	<101	N/A	N/A
31	South Elevator Pit	<14	<101	<60	<397
32	South Elevator Pit	<14	<101	N/A	N/A
	MIN	2	11	20	68
	MAX	132	279	873	14000
	MEAN	29 0	160 7	241 0	2218 7

* Scan locations limited due to remote survey techniques

109

ATTACHMENT E-4

B881 Stainless Steel Floors

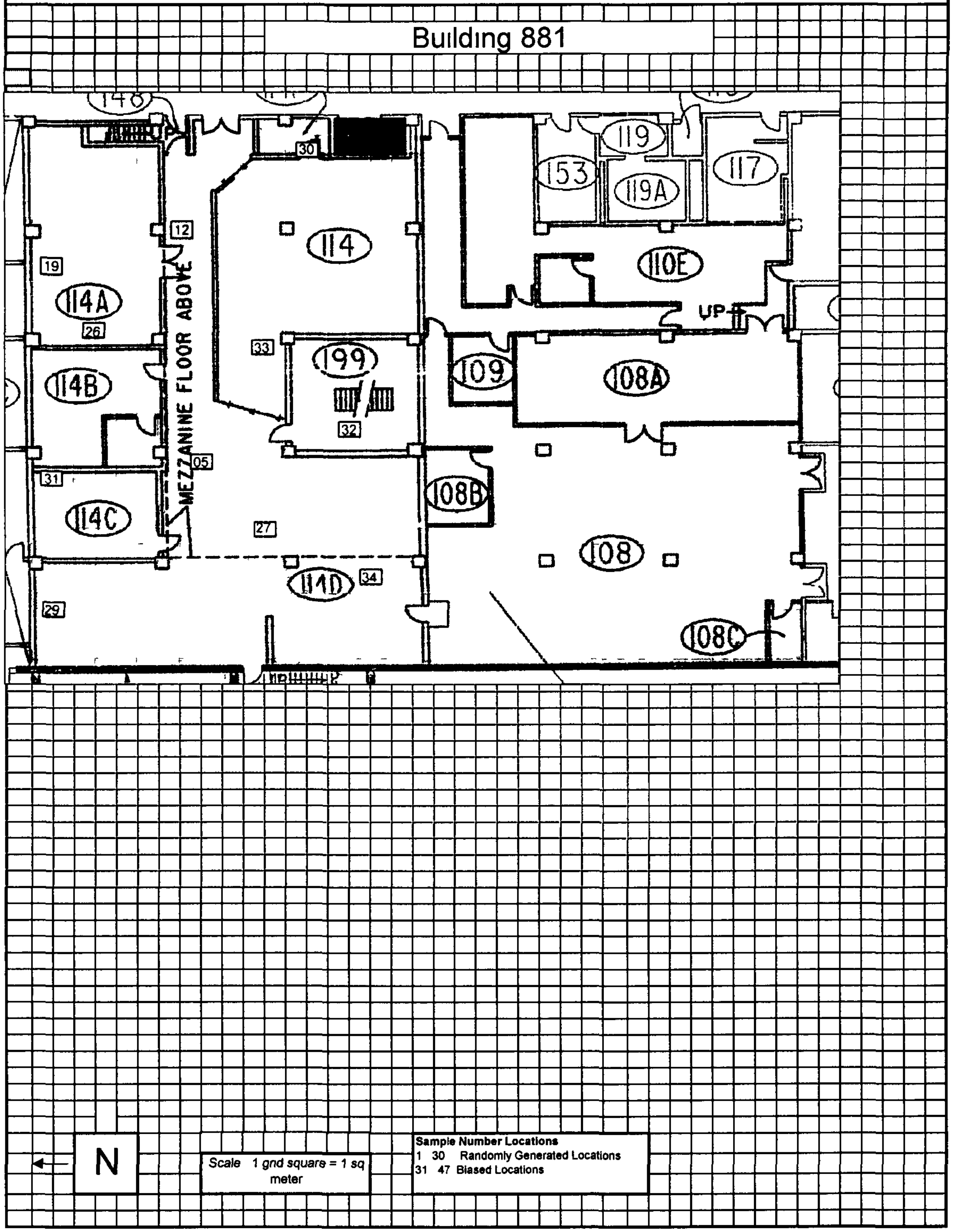
(SURVEY AREA I)

112

RLC Survey Area I
B881 STAINLESS STEEL FLOOR
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	ROOM 232	2 6	25	18	410
2	ROOM 114J	NOT SAMPLED - INACCESSIBLE			
3	ROOM 114H	8 7	5 1	0	0
4	ROOM 114H	0	0	144	0
5	ROOM 114	0	0	0	0
6	ROOM 244	0	0	60	360
7	ROOM 235F	1 8	0	24	360
8	ROOM 114K2	NOT SAMPLED - INACCESSIBLE			
9	ROOM 114H	0	0	0	0
10	ROOM 232	5 7	2 5	0	0
11	ROOM 245	0	0	0	900
12	ROOM 114	8 1	0	0	0
13	ROOM 232	0	0	0	0
14	ROOM 232	8 6	2 5	0	0
15	ROOM 245	0	0	180	720
16	ROOM 235C	5 7	0	8	0
17	ROOM 114H	0	0	0	0
18	ROOM 265A	5 5	0	18	540
19	ROOM 114A	1 8	0	24	360
20	ROOM 232	8 6	0	0	0
21	ROOM 238A	8 6	0	0	0
22	ROOM 232	8 6	2 5	0	0
23	ROOM 238	0	0	0	0
24	ROOM 265	2 6	0	18	900
25	ROOM 245	0	0	12	720
26	ROOM 114A	12000	3600	180000	28800
27	ROOM 114	2 3	0	0	0
28	ROOM 244	0	0	18	360
29	ROOM 114D	5 2	0	60	0
30	ROOM 114F	0	0	0	0
31	ROOM 114C	8 1	0	0	0
32	ROOM 199	70	0	1164	720
33	ROOM 114	23	0	0	0
34	ROOM 114D	0	0	0	0
35	ROOM 114M	8 7	0	0	0
36	ROOM 114H	5 7	7 7	0	0
37	ROOM 245	0	0	18	540
38	ROOM 232	0	0	0	0
39	ROOM 231	0	0	0	0
40	ROOM231	0	0	180	0
41	ROOM 233	20	2400	200	434
42	ROOM 253	2 8	0	0	0
43	ROOM 253	5 7	0	0	0
44	ROOM 99	5 7	2 5	0	0
45	ROOM 99	5 7	0	0	0
46	ROOM 316	5 7	0	0	0
47	ROOM 99 MIDLEVEL	5 2	0	60	0
	MIN	0	0	0	0
	MAX	12000	3600	180000	28800
	MEAN	272 2	134 4	4049 0	802 8

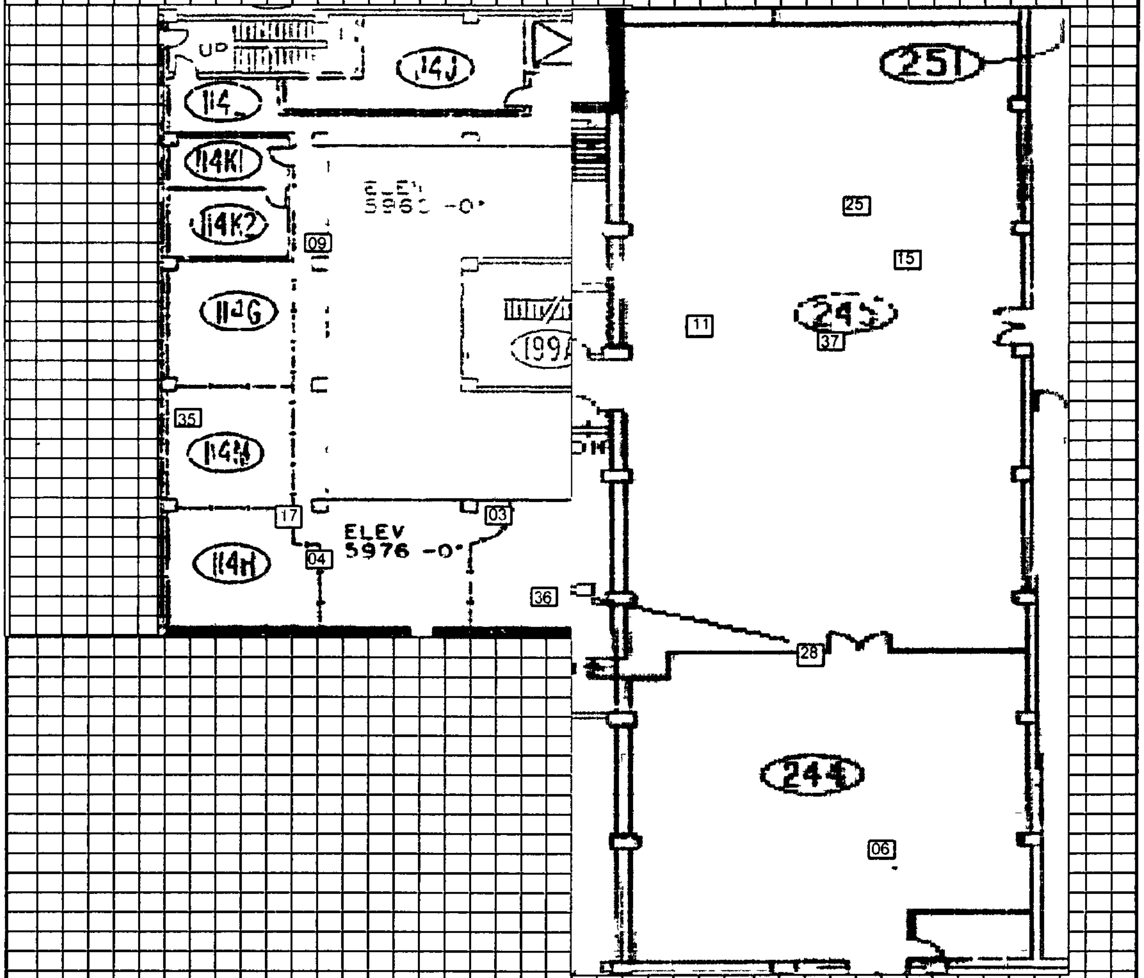
Survey Area Stainless Steel	Survey Unit N/A	Building/Structure 881
Survey Unit/Area Description First Floor		



114

Survey Area Stainless Steel	Survey Unit N/A	Building/Structure 881
Survey Unit/Area Description Second floor/First Floor Mezzanine		

Building 881



N

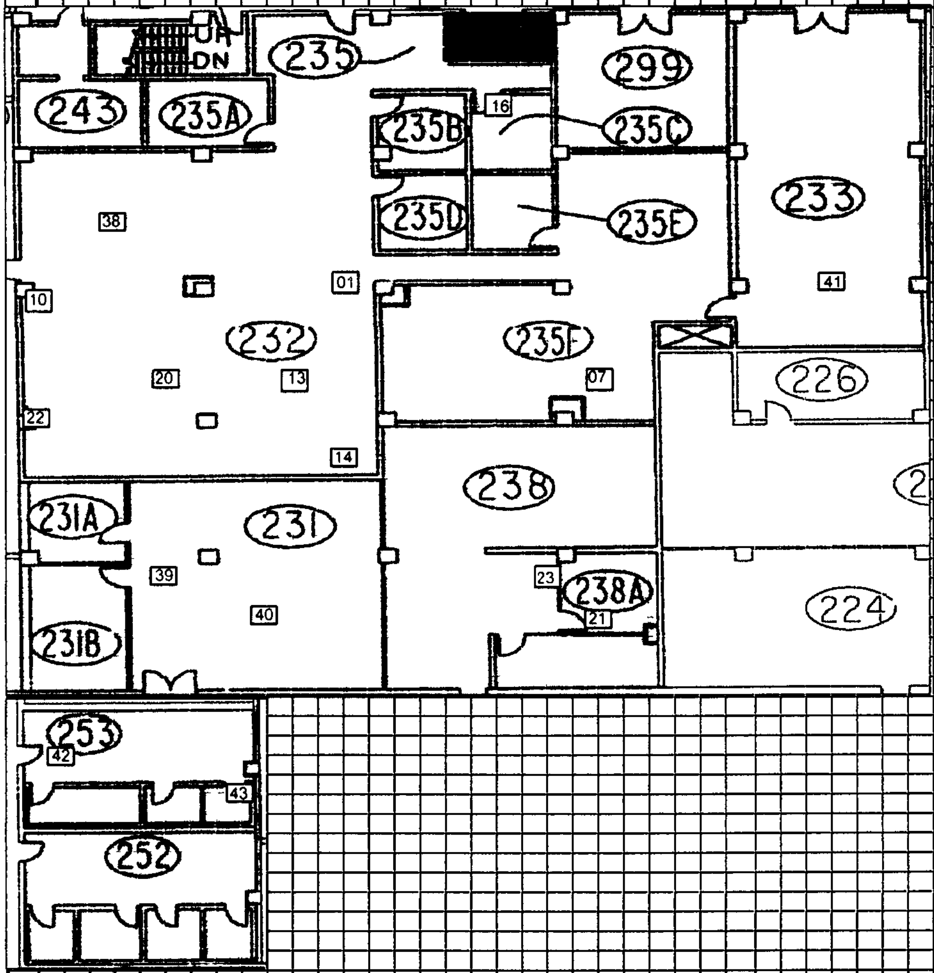
Scale 1 grid square = 1 sq meter

Sample Number Locations
1 30 Randomly Generated Locations
31 47 Biased Locations

115

Survey Area Stainless Steel	**Survey Unit** N/A	**Building/Structure** 881
Survey Unit/Area Description Second floor		

Building 881



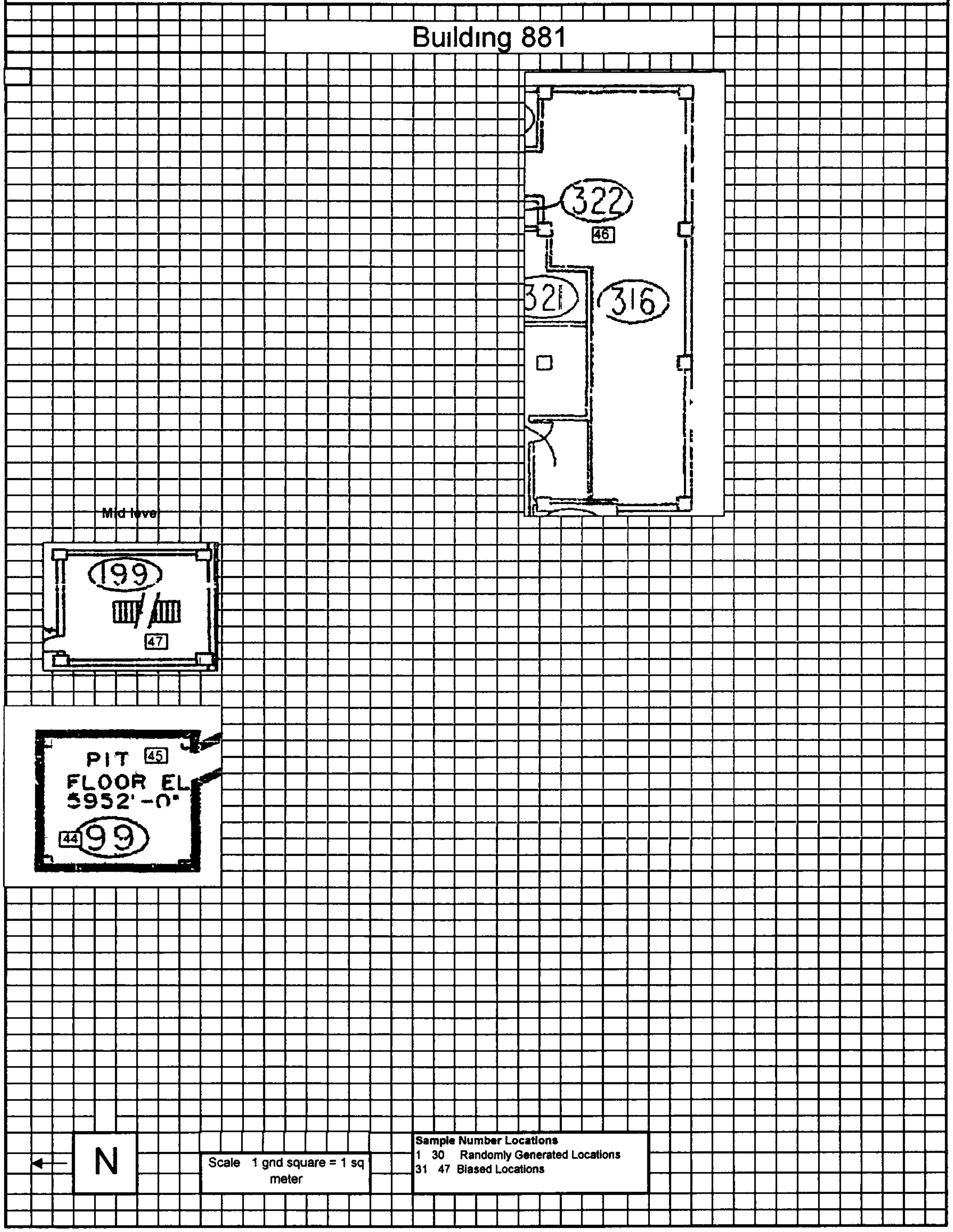
N

Scale 1 grid square = 1 sq meter

Sample Number Locations
1 30 Randomly Generated Locations
31 47 Biased Locations

116

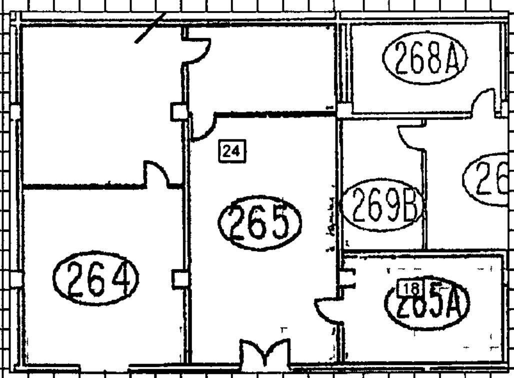
Survey Area	Stainless Steel	Survey Unit	N/A	Building/Structure	881
Survey Unit/Area Description	Second Floor Mezzanine & Basement				



117

Survey Area	Stainless Steel	Survey Unit	N/A	Building/Structure	881
Survey Unit/Area Description	Second Floor				

Building 881



N

Scale 1 grid square = 1 sq meter

Sample Number Locations
1 30 Randomly Generated Locations
31 47 Biased Locations

118

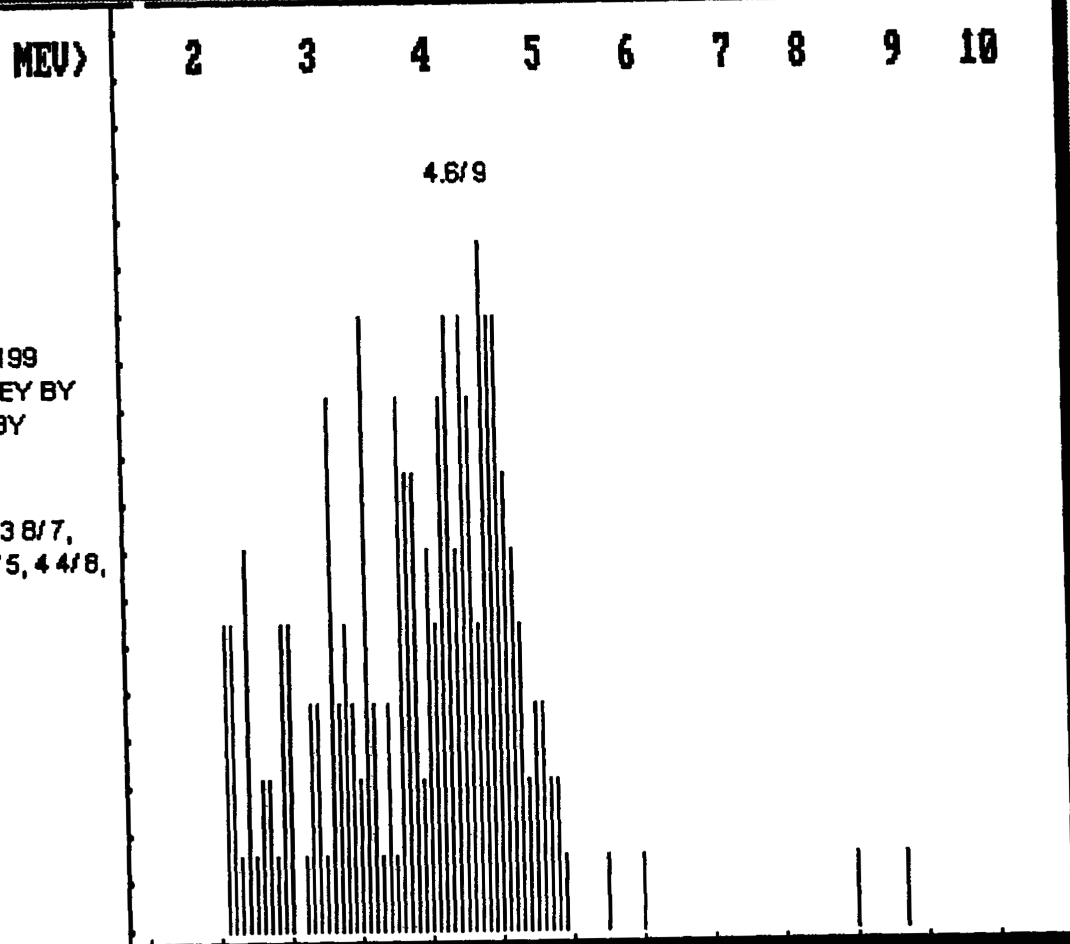
C:\WINNT\Profiles\bartlett\Desktop\SDR95PC.EXE - FROZEN

0906012.SPE
REC# 1 OF 1

MIN: 0
MAX: 9
RANGE: 9
ZOOM: MAX x 0.750

SURVEY OF SAMPLE # 32 FROM RM 199 STAINLESS STEEL FLOOR CUT SURVEY BY L SEVERTSON ON 9/5/01 COUNTED BY M.DOLLARHIDE ON 9/6/01

PEAK ENERGIES: 2 4/5, 3 2/7, 3 5/8, 3 8/7, 3 9/6, 3 9/6, 4 1/5, 4 2/7, 4.3/8, 4 3/5, 4 4/8, 4 5/7, 4 6/9, 4 7/8, 4.7/8, 4 8/6



1/9

ATTACHMENT E-5

B881 1st Floor Data Gap Rooms

(SURVEY AREA J)

120

RLC Survey Area J
B881 DATA GAP ROOMS (1st FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Mezzanine - Floors/Walls < 2 meters	0	16	9	0
2	Mezzanine - Floors/Walls < 2 meters	0	0	0	0
3	Mezzanine - Floors/Walls < 2 meters	0	20	0	0
4	Mezzanine - Floors/Walls < 2 meters	0	0	0	0
5	Mezzanine - Floors/Walls < 2 meters	0	0	0	0
6	Mezzanine - Floors/Walls < 2 meters	0	32	41	284
7	Mezzanine - Floors/Walls < 2 meters	0	56	9	972
8	Mezzanine - Floors/Walls < 2 meters	3	0	0	263
9	Mezzanine - Floors/Walls < 2 meters	0	16	0	0
10	Mezzanine - Floors/Walls < 2 meters	0	44	0	0
11	1st Floor - Floors/Walls < 2 meters	0	0	14	538
12	1st Floor - Floors/Walls < 2 meters	0	36	0	0
13	1st Floor - Floors/Walls < 2 meters	0	0	0	0
14	1st Floor - Floors/Walls < 2 meters	0	24	0	0
15	1st Floor - Floors/Walls < 2 meters	0	28	18	0
16	1st Floor - Floors/Walls < 2 meters	0	0	27	603
17	1st Floor - Floors/Walls < 2 meters	0	0	27	228
18	1st Floor - Floors/Walls < 2 meters	0	24	32	725
19	1st Floor - Floors/Walls < 2 meters	0	12	0	222
20	1st Floor - Floors/Walls < 2 meters	0	0	5	691
21	1st Floor - Floors/Walls < 2 meters	0	0	81	472
22	1st Floor - Floors/Walls < 2 meters	0	24	27	519
23	1st Floor - Floors/Walls < 2 meters	3	12	27	0
24	1st Floor - Floors/Walls < 2 meters	0	0	9	0
25	1st Floor - Floors/Walls < 2 meters	0	28	77	0
26	1st Floor - Floors/Walls < 2 meters	0	0	23	0
27	1st Floor - Floors/Walls < 2 meters	0	12	14	0
28	1st Floor - Floors/Walls < 2 meters	0	0	9	0
29	1st Floor Floors/Walls < 2 meters	3	0	0	63
30	1st Floor - Floors/Walls < 2 meters	0	0	14	0
31	1st Floor - Floors/Walls < 2 meters	0	16	0	0
32	1st Floor - Floors/Walls < 2 meters	0	0	18	0
33	1st Floor - Floors/Walls < 2 meters	0	0	9	0
34	1st Floor Floors/Walls < 2 meters	0	20	72	309
35	1st Floor Floors/Walls < 2 meters	3	24	18	0
36	1st Floor - Floors/Walls < 2 meters	0	28	77	531
37	1st Floor - Floors/Walls < 2 meters	0	0	17	591
38	1st Floor - Floors/Walls < 2 meters	0	16	9	419
39	1st Floor - Floors/Walls < 2 meters	0	0	32	275
40	1st Floor - Floors/Walls < 2 meters	0	0	0	0
41	1st Floor - Floors/Walls < 2 meters	0	0	23	0
42	1st Floor Floors/Walls < 2 meters	0	0	11	0
43	1st Floor - Floors/Walls < 2 meters	0	0	0	0
44	1st Floor - Floors/Walls < 2 meters	0	0	0	0
45	1st Floor - Floors/Walls < 2 meters	0	0	17	0
46	1st Floor - Floors/Walls < 2 meters	0	0	11	0
47	1st Floor - Floors/Walls < 2 meters	3	0	11	0
48	1st Floor - Floors/Walls < 2 meters	0	44	6	293
49	1st Floor - Floors/Walls < 2 meters	3	4	0	0
50	1st Floor - Floors/Walls < 2 meters	0	0	6	0

RLC Survey Area J
B881 DATA GAP ROOMS (1st FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
51	1st Floor - Floors/Walls < 2 meters	0	0	6	41
52	1st Floor - Floors/Walls < 2 meters	12	24	68	146
53	1st Floor - Floors/Walls < 2 meters	0	0	0	0
54	1st Floor - Floors/Walls < 2 meters	0	0	6	44
55	1st Floor - Floors/Walls < 2 meters	0	0	11	0
56	1st Floor - Floors/Walls < 2 meters	0	4	0	0
57	1st Floor - Floors/Walls < 2 meters	0	0	0	127
58	1st Floor Floors/Walls < 2 meters	0	20	5	90
59	1st Floor - Floors/Walls < 2 meters	0	32	14	0
60	1st Floor Floors/Walls < 2 meters	3	36	14	467
61	1st Floor - Floors/Walls < 2 meters	0	0	0	170
62	1st Floor - Floors/Walls < 2 meters	0	16	0	217
63	1st Floor - Floors/Walls < 2 meters	3	52	0	363
64	1st Floor - Floors/Walls < 2 meters	3	0	9	600
65	1st Floor - Floors/Walls < 2 meters	0	0	0	300
66	1st Floor - Floors/Walls < 2 meters	0	28	9	0
67	1st Floor - Floors/Walls < 2 meters	0	16	0	140
68	1st Floor - Floors/Walls < 2 meters	0	0	14	0
69	1st Floor Floors/Walls < 2 meters	0	0	5	0
70	1st Floor - Floors/Walls < 2 meters	0	28	0	0
71	1st Floor - Floors/Walls < 2 meters	0	16	9	103
72	1st Floor - Floors/Walls < 2 meters	0	0	0	23
73	1st Floor - Floors/Walls < 2 meters	0	0	0	307
74	1st Floor - Floors/Walls < 2 meters	0	0	5	273
75	1st Floor - Floors/Walls < 2 meters	3	24	9	0
76	1st Floor - Floors/Walls < 2 meters	3	36	9	0
77	1st Floor - Floors/Walls < 2 meters	0	36	5	0
78	1st Floor - Floors/Walls < 2 meters	0	12	0	0
79	1st Floor - Floors/Walls < 2 meters	0	8	9	0
80	1st Floor - Floors/Walls < 2 meters	3	0	24	0
81	1st Floor - Floors/Walls < 2 meters	0	68	14	0
82	1st Floor - Floors/Walls < 2 meters	0	0	5	247
83	1st Floor - Floors/Walls < 2 meters	0	0	0	0
84	1st Floor - Floors/Walls < 2 meters	0	12	0	80
85	1st Floor - Floors/Walls < 2 meters	0	24	9	0
86	1st Floor Floors/Walls < 2 meters	3	0	9	0
87	1st Floor - Floors/Walls < 2 meters	0	0	9	0
88	1st Floor - Floors/Walls < 2 meters	3	120	14	0
89	1st Floor - Floors/Walls < 2 meters	0	0	5	0
90	1st Floor - Floors/Walls < 2 meters	0	0	18	0
91	1st Floor - Floors/Walls < 2 meters	0	20	0	0
92	1st Floor - Floors/Walls < 2 meters	0	12	9	0
93	1st Floor - Floors/Walls < 2 meters	0	8	18	0
94	1st Floor - Floors/Walls < 2 meters	0	44	18	0
95	1st Floor - Floors/Walls < 2 meters	0	0	14	0
96	Mezzanine - Ceilings/Walls >2 meters	3	0	0	0
97	Mezzanine - Ceilings/Walls >2 meters	3	32	0	0
98	Mezzanine - Ceilings/Walls >2 meters	0	0	18	0
99	Mezzanine - Ceilings/Walls >2 meters	0	0	5	0
100	Mezzanine Ceilings/Walls >2 meters	0	0	51	0

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RLC Survey Area J B881 DATA GAP ROOMS (1st FLOOR) Survey Results					
Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
101	1st Floor - Ceilings/Walls > 2 meters	0	0	50	0
102	1st Floor - Ceilings/Walls > 2 meters	0	28	41	0
103	1st Floor - Ceilings/Walls > 2 meters	0	0	55	0
104	1st Floor - Ceilings/Walls > 2 meters	0	16	18	0
105	1st Floor - Ceilings/Walls > 2 meters	0	0	45	0
106	1st Floor - Ceilings/Walls > 2 meters	3	0	18	0
107	1st Floor - Ceilings/Walls > 2 meters	0	24	9	0
108	1st Floor - Ceilings/Walls > 2 meters	0	16	41	0
109	1st Floor - Ceilings/Walls > 2 meters	0	20	45	0
110	1st Floor - Ceilings/Walls > 2 meters	0	0	23	0
111	1st Floor - Ceilings/Walls > 2 meters	0	0	36	0
112	1st Floor - Ceilings/Walls > 2 meters	3	16	41	0
113	1st Floor - Ceilings/Walls > 2 meters	0	16	23	0
114	1st Floor - Ceilings/Walls > 2 meters	3	0	9	0
115	1st Floor - Ceilings/Walls > 2 meters	0	0	14	0
116	1st Floor - Ceilings/Walls > 2 meters	0	0	14	0
117	1st Floor - Ceilings/Walls > 2 meters	0	0	27	0
118	1st Floor - Ceilings/Walls > 2 meters	0	0	32	0
119	1st Floor - Ceilings/Walls > 2 meters	0	36	18	0
120	1st Floor - Ceilings/Walls > 2 meters	0	12	18	0
121	1st Floor - Ceilings/Walls > 2 meters	0	16	0	0
122	1st Floor - Ceilings/Walls > 2 meters	0	4	27	0
123	1st Floor - Ceilings/Walls > 2 meters	0	24	14	0
124	1st Floor - Ceilings/Walls > 2 meters	0	3	23	0
125	1st Floor - Ceilings/Walls > 2 meters	3	0	27	0
126	1st Floor - Ceilings/Walls > 2 meters	0	0	23	0
127	1st Floor - Ceilings/Walls > 2 meters	0	0	0	0
128	1st Floor - Ceilings/Walls > 2 meters	0	54	9	0
129	1st Floor - Ceilings/Walls > 2 meters	3	0	9	0
130	1st Floor - Ceilings/Walls > 2 meters	0	0	23	0
131	*Mezzanine - Equipment*	*0*	*0*	*0*	*0*
132	Mezzanine - Equipment	0	0	5	62
133	Mezzanine - Equipment	0	0	5	65
134	Mezzanine - Equipment	0	20	23	0
135	Mezzanine - Equipment	0	8	5	86
136	Mezzanine - Equipment	0	0	0	0
137	Mezzanine - Equipment	0	0	0	0
138	Mezzanine - Equipment	0	32	5	0
139	Mezzanine - Equipment	3	0	23	0
140	Mezzanine - Equipment	0	36	18	0
141	1st Floor - Equipment	0	4	5	0
142	1st Floor - Equipment	0	0	27	0
143	1st Floor - Equipment	0	24	18	0
144	1st Floor - Equipment	0	0	18	6
145	1st Floor - Equipment	3	0	36	0
146	1st Floor - Equipment	0	0	14	0
147	1st Floor - Equipment	3	24	23	0
148	1st Floor - Equipment	0	0	18	0
149	1st Floor - Equipment	0	0	9	0
150	1st Floor - Equipment	6	0	9	0

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RLC Survey Area J
B881 DATA GAP ROOMS (1st FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
151	1st Floor - Equipment	0	36	5	0
152	1st Floor - Equipment	0	12	5	0
153	1st Floor - Equipment	3	4	145	0
154	1st Floor - Equipment	0	0	14	0
155	1st Floor - Equipment	3	0	5	0
156	1st Floor - Equipment	3	24	5	0
157	1st Floor - Equipment	6	20	14	0
158	1st Floor - Equipment	0	0	18	0
159	1st Floor - Equipment	0	0	5	0
160	1st Floor - Equipment	0	44	14	0
161	1st Floor - Equipment	0	24	5	0
162	1st Floor - Equipment	3	40	18	0
163	1st Floor - Equipment	0	24	81	0
164	1st Floor - Equipment	0	16	23	0
165	1st Floor - Equipment	3	0	27	0
166	1st Floor - Equipment	0	0	0	0
167	1st Floor - Equipment	3	12	9	0
168	1st Floor - Equipment	0	44	0	0
169	1st Floor - Equipment	0	12	0	0
170	1st Floor - Equipment	0	72	0	0
171	1st Floor - Equipment	0	32	0	0
172	1st Floor - Equipment	3	12	0	0
173	1st Floor - Equipment	3	0	0	0
174	1st Floor - Equipment	0	0	9	0
175	1st Floor - Equipment	0	0	0	0
176	1st Floor - Equipment	3	32	0	0
177	1st Floor - Equipment	0	0	0	0
178	1st Floor - Equipment	0	0	0	0
179	1st Floor - Equipment	0	36	0	0
180	1st Floor - Equipment	0	0	0	0
181	1st Floor - Equipment	0	0	0	0
182	1st Floor - Equipment	0	8	0	0
183	1st Floor - Equipment	0	0	0	0
184	1st Floor - Equipment	0	0	0	0
185	1st Floor - Equipment	0	0	0	0
186	1st Floor - Equipment	0	36	0	0
187	1st Floor - Equipment	0	0	0	0
188	1st Floor - Equipment	0	0	5	0
189	1st Floor - Equipment	0	0	14	0
190	1st Floor Equipment	0	20	9	0
191	1st Floor - Equipment	3	20	9	0
192	1st Floor - Equipment	0	0	32	0
193	1st Floor - Equipment	0	0	0	0
194	1st Floor - Equipment	0	0	0	0
195	1st Floor - Equipment	6	28	9	0
196	1st Floor - Equipment	0	0	0	0
197	1st Floor - Equipment	3	4	0	0
198	1st Floor - Equipment	0	0	5	0
199	1st Floor - Equipment	0	0	14	0
200	1st Floor - Equipment	3	44	0	0

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RLC Survey Area J

B881 DATA GAP ROOMS (1st FLOOR)

Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
201	1st Floor - Equipment	0	0	0	0
202	1st Floor - Equipment	0	0	0	0
203	1st Floor - Equipment	0	20	0	0
204	1st Floor - Equipment	0	12	0	0
205	1st Floor - Equipment	0	0	0	0
206	1st Floor - Equipment	0	0	9	0
207	1st Floor - Equipment	3	0	0	0
208	1st Floor - Equipment	0	8	23	0
209	1st Floor - Equipment	0	8	0	0
210	1st Floor - Equipment	0	12	0	0
211	1st Floor - Equipment	0	4	5	0
212	1st Floor - Equipment	3	0	0	0
213	1st Floor - Equipment	0	0	5	0
214	1st Floor - Equipment	0	0	5	0
215	1st Floor - Equipment	0	24	0	0
216	1st Floor - Equipment	0	34	0	0
217	1st Floor - Equipment	0	16	5	0
218	1st Floor - Equipment	0	8	0	0
219	1st Floor - Equipment	0	0	0	0
220	1st Floor - Equipment	0	72	0	0
221	1st Floor - Equipment	0	12	5	0
222	1st Floor - Equipment	0	12	0	0
223	1st Floor - Equipment	0	0	0	0
224	1st Floor - Equipment	0	64	0	0
225	1st Floor - Equipment	3	28	5	0
	MIN	0	0	0	0
	MAX	12	120	145	972
	MEAN	0 65	11 9	12 4	53 1

Scan Surveys (Highest Activity Reported)
Floors/Walls < 2 meters 93 dpm/100 cm^2 (alpha), 1097 dpm/100 cm^2 (beta)
Floors/Walls > 2 meters No scan surveys required
Equipment 110 dpm/100 cm^2 (alpha)

125

ATTACHMENT E-6

B881 2nd Floor Data Gap Rooms

(SURVEY AREA K)

134

RLC Survey Area K

B881 DATA GAP ROOMS (2nd FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	12	328
2	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	0
3	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	12	0
4	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	12	0
5	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	36	115
6	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	0	0
7	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	36	749
8	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	0
9	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	162
10	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	30	853
11	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	36	216
12	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	662
13	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	0	144
14	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	18	227
15	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	497
16	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	42	68
17	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	0
18	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	6	0
19	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	0
20	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	0	11
21	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	24	0
22	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	30	0
23	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	6	151
24	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	0	0
25	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	12	97
26	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	0	0
27	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	12	0
28	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	0	749
29	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	72	0
30	Mezzanine - Walls/Floor < 2 meters	< 18	< 205	12	227

Scan Surveys (Highest Activity Reported)

1 m^2 scans showed no elevated activity

135

RLC Survey Area K B881 DATA GAP ROOMS (2nd FLOOR) Survey Results					
Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	6	342
2	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	42	76
3	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	36	292
4	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	30	0
5	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	18	72
6	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	18	450
7	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	24	61
8	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	0	720
9	Mezzanine - Ceiling/Wall > 2 meters	< 18	< 205	24	0
	MIN	< 18	< 205	0	0
	MAX	< 18	< 205	72	853
	MEAN	< 18	< 205	19 8	186 4

Scan Surveys (Highest Activity Reported)

1 m^2 scans showed no elevated activity

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RLC Survey Area K
B881 DATA GAP ROOMS (2nd FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Mezzanine - Equipment	< 18	< 205	12	0
2	Mezzanine - Equipment	< 18	< 205	30	0
3	Mezzanine - Equipment	< 18	< 205	30	0
4	Mezzanine - Equipment	< 18	< 205	24	0
5	Mezzanine - Equipment	< 18	< 205	30	0
6	Mezzanine - Equipment	< 18	< 205	24	0
7	Mezzanine - Equipment	< 18	< 205	18	0
8	Mezzanine - Equipment	< 18	< 205	0	0
9	Mezzanine - Equipment	< 18	< 205	24	0
10	Mezzanine - Equipment	< 18	< 205	24	0
11	Mezzanine - Equipment	< 18	< 205	48	497
12	Mezzanine - Equipment	< 18	< 205	0	0
13	Mezzanine - Equipment	< 18	< 205	18	0
14	Mezzanine - Equipment	< 18	< 205	18	0
15	Mezzanine - Equipment	< 18	< 205	18	121
16	Mezzanine - Equipment	< 18	< 205	18	0
17	Mezzanine - Equipment	< 18	< 205	24	0
18	Mezzanine - Equipment	< 18	< 205	0	346
19	Mezzanine - Equipment	< 18	< 205	60	0
20	Mezzanine - Equipment	< 18	< 205	42	0
21	Mezzanine - Equipment	< 18	< 205	42	0
22	Mezzanine - Equipment	< 18	< 205	18	421
23	Mezzanine - Equipment	< 18	< 205	30	0
24	Mezzanine - Equipment	< 18	< 205	24	0
25	Mezzanine - Equipment	< 18	< 205	36	0
26	Mezzanine - Equipment	< 18	< 205	0	0
27	Mezzanine - Equipment	< 18	< 205	0	0
28	Mezzanine - Equipment	< 18	< 205	0	0
29	Mezzanine - Equipment	< 18	< 205	24	0
30	Mezzanine - Equipment	< 18	< 205	0	0
	MIN	< 18	< 205	0	0
	MAX	< 18	< 205	60	497
	MEAN	< 18	< 205	21 2	46 2

Scan Surveys (Highest Activity Reported)

1 m^2 scans showed no elevated activity

137

RLC Survey Area K B881 DATA GAP ROOMS (2nd FLOOR) Survey Results					
Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Walls/Floors < 2 meters	< 18	< 205	0	0
2	Walls/Floors < 2 meters	< 18	< 205	0	126
3	Walls/Floors < 2 meters	< 18	< 205	0	0
4	Walls/Floors < 2 meters	< 18	< 205	330	0
5	Walls/Floors < 2 meters	< 18	< 205	0	0
6	Walls/Floors < 2 meters	< 18	< 205	0	72
7	Walls/Floors < 2 meters	< 18	< 205	66	76
8	Walls/Floors < 2 meters	< 18	< 205	12	104
9	Walls/Floors < 2 meters	< 18	< 205	24	0
10	Walls/Floors < 2 meters	< 18	< 205	0	0
11	Walls/Floors < 2 meters	< 18	< 205	0	0
12	Walls/Floors < 2 meters	< 18	< 205	0	0
13	Walls/Floors < 2 meters	< 18	< 205	0	0
14	Walls/Floors < 2 meters	< 18	< 205	0	0
15	Walls/Floors < 2 meters	< 18	< 205	0	0
16	Walls/Floors < 2 meters	< 18	< 205	54	0
17	Walls/Floors < 2 meters	< 18	< 205	0	0
18	Walls/Floors < 2 meters	< 18	< 205	24	0
19	Walls/Floors < 2 meters	< 18	< 205	0	0
20	Walls/Floors < 2 meters	< 18	< 205	0	583
21	Walls/Floors < 2 meters	< 18	< 205	12	0
22	Walls/Floors < 2 meters	< 18	< 205	48	0
23	Walls/Floors < 2 meters	< 18	< 205	42	220
24	Walls/Floors < 2 meters	< 18	< 205	24	0
25	Walls/Floors < 2 meters	< 18	< 205	66	0
26	Walls/Floors < 2 meters	< 18	< 205	24	0
27	Walls/Floors < 2 meters	< 18	< 205	24	0
28	Walls/Floors < 2 meters	< 18	< 205	0	238
29	Walls/Floors < 2 meters	< 18	< 205	0	428
30	Walls/Floors < 2 meters	< 18	< 205	6	0
31	Walls/Floors < 2 meters	< 18	< 205	0	0
32	Walls/Floors < 2 meters	< 18	< 205	12	0
33	Walls/Floors < 2 meters	< 18	< 205	30	0
34	Walls/Floors < 2 meters	< 18	< 205	0	0
35	Walls/Floors < 2 meters	< 18	< 205	0	0
36	Walls/Floors < 2 meters	< 18	< 205	18	0
37	Walls/Floors < 2 meters	< 18	< 205	0	0
38	Walls/Floors < 2 meters	< 18	< 205	24	0
39	Walls/Floors < 2 meters	< 18	< 205	0	187
40	Walls/Floors < 2 meters	< 18	< 205	0	0
41	Walls/Floors < 2 meters	< 18	< 205	0	0
42	Walls/Floors < 2 meters	< 18	< 205	0	0
43	Walls/Floors < 2 meters	< 18	< 205	0	0
44	Walls/Floors < 2 meters	< 18	< 205	0	0
45	Walls/Floors < 2 meters	< 18	< 205	0	0
46	Walls/Floors < 2 meters	< 18	< 205	42	0
47	Walls/Floors < 2 meters	< 18	< 205	0	612
48	Walls/Floors < 2 meters	< 18	< 205	0	234
49	Walls/Floors < 2 meters	< 18	< 205	0	0
50	Walls/Floors < 2 meters	< 18	< 205	0	0

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RLC Survey Area K
B881 DATA GAP ROOMS (2nd FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
51	Walls/Floors < 2 meters	< 18	< 205	0	0
52	Walls/Floors < 2 meters	< 18	< 205	0	0
53	Walls/Floors < 2 meters	< 18	< 205	0	0
54	Walls/Floors < 2 meters	< 18	< 205	0	0
55	Walls/Floors < 2 meters	< 18	< 205	0	0
56	Walls/Floors < 2 meters	< 18	< 205	0	0
57	Walls/Floors < 2 meters	< 18	< 205	0	0
58	Walls/Floors < 2 meters	< 18	< 205	0	835
59	Walls/Floors < 2 meters	< 18	< 205	0	0
60	Walls/Floors < 2 meters	< 18	< 205	0	0
61	Walls/Floors < 2 meters	< 18	< 205	0	0
62	Walls/Floors < 2 meters	< 18	< 205	24	162
63	Walls/Floors < 2 meters	< 18	< 205	0	0
64	Walls/Floors < 2 meters	< 18	< 205	0	104
65	Walls/Floors < 2 meters	< 18	< 205	0	0
66	Walls/Floors < 2 meters	< 18	< 205	72	914
67	Walls/Floors < 2 meters	< 18	< 205	0	515
68	Walls/Floors < 2 meters	< 18	< 205	0	0
69	Walls/Floors < 2 meters	< 18	< 205	0	0
70	Walls/Floors < 2 meters	< 18	< 205	0	0
71	Walls/Floors < 2 meters	< 18	< 205	0	0
72	Walls/Floors < 2 meters	< 18	< 205	0	0
73	Walls/Floors < 2 meters	< 18	< 205	0	0
74	Walls/Floors < 2 meters	< 18	< 205	0	0
75	Walls/Floors < 2 meters	< 18	< 205	0	0
76	Walls/Floors < 2 meters	< 18	< 205	0	0
77	Walls/Floors < 2 meters	< 18	< 205	0	0
78	Walls/Floors < 2 meters	< 18	< 205	0	0
79	Walls/Floors < 2 meters	< 18	< 205	0	0
80	Walls/Floors < 2 meters	< 18	< 205	0	0
81	Walls/Floors < 2 meters	< 18	< 205	0	0
82	Walls/Floors < 2 meters	< 18	< 205	0	857
83	Walls/Floors < 2 meters	< 18	< 205	0	0
84	Walls/Floors < 2 meters	< 18	< 205	6	0
85	Walls/Floors < 2 meters	< 18	< 205	0	0
86	Walls/Floors < 2 meters	< 18	< 205	0	0
87	Walls/Floors < 2 meters	< 18	< 205	12	0
88	Walls/Floors < 2 meters	< 18	< 205	24	659
89	Walls/Floors < 2 meters	< 18	< 205	0	0
90	Walls/Floors < 2 meters	< 18	< 205	0	0
91	Walls/Floors < 2 meters	< 18	< 205	0	0
92	Walls/Floors < 2 meters	< 18	< 205	0	0
93	Walls/Floors < 2 meters	< 18	< 205	0	0
94	Walls/Floors < 2 meters	< 18	< 205	0	0
95	Walls/Floors < 2 meters	< 18	< 205	0	0
96	Walls/Floors < 2 meters	< 18	< 205	0	0
97	Walls/Floors < 2 meters	< 18	< 205	24	349
98	Walls/Floors < 2 meters	< 18	< 205	12	248
99	Walls/Floors < 2 meters	< 18	< 205	0	0
100	Walls/Floors < 2 meters	< 18	< 205	30	0

RLC Survey Area K
B881 DATA GAP ROOMS (2nd FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
101	Walls/Floors < 2 meters	< 18	< 205	12	0
102	Walls/Floors < 2 meters	< 18	< 205	12	0
103	Walls/Floors < 2 meters	< 18	< 205	24	0
104	Walls/Floors < 2 meters	< 18	< 205	0	0
105	Walls/Floors < 2 meters	< 18	< 205	0	0
106	Walls/Floors < 2 meters	< 18	< 205	0	0
107	Walls/Floors < 2 meters	< 18	< 205	0	0
108	Walls/Floors < 2 meters	< 18	< 205	0	0
109	Walls/Floors < 2 meters	< 18	< 205	0	589
110	Walls/Floors < 2 meters	< 18	< 205	0	0
111	Walls/Floors < 2 meters	< 18	< 205	0	0
112	Walls/Floors < 2 meters	< 18	< 205	0	0
113	Walls/Floors < 2 meters	< 18	< 205	0	382
114	Walls/Floors < 2 meters	< 18	< 205	0	720
	MIN	< 18	< 205	0	0
	MAX	< 18	< 205	330	914
	MEAN	< 18	< 205	9 9	80 8

Scan Surveys (Highest Activity Reported)

1 m^2 scans showed 340 dpm/100 cm^2 (alpha) and 914 dpm/100 cm^2 (beta)

140

RLC Survey Area K B881 DATA GAP ROOMS (2nd FLOOR) Survey Results					
Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Ceilings/Walls > 2 meters	< 18	< 205	0	0
2	Ceilings/Walls > 2 meters	<18	<205	0	0
3	Ceilings/Walls > 2 meters	<18	<205	0	0
4	Ceilings/Walls > 2 meters	<18	<205	78	0
5	Ceilings/Walls > 2 meters	<18	<205	66	0
6	Ceilings/Walls > 2 meters	< 18	< 205	54	0
7	Ceilings/Walls > 2 meters	<18	<205	60	0
8	Ceilings/Walls > 2 meters	<18	<205	24	299
9	Ceilings/Walls > 2 meters	<18	<205	0	0
10	Ceilings/Walls > 2 meters	<18	<205	0	0
11	Ceilings/Walls > 2 meters	< 18	< 205	48	0
12	Ceilings/Walls > 2 meters	<18	<205	12	0
13	Ceilings/Walls > 2 meters	<18	<205	0	0
14	Ceilings/Walls > 2 meters	<18	<205	66	0
15	Ceilings/Walls > 2 meters	<18	<205	24	169
16	Ceilings/Walls > 2 meters	< 18	< 205	0	569
17	Ceilings/Walls > 2 meters	<18	<205	0	0
18	Ceilings/Walls > 2 meters	<18	<205	6	0
19	Ceilings/Walls > 2 meters	<18	<205	0	0
20	Ceilings/Walls > 2 meters	<18	<205	0	0
21	Ceilings/Walls > 2 meters	< 18	< 205	6	0
22	Ceilings/Walls > 2 meters	<18	<205	12	0
23	Ceilings/Walls > 2 meters	<18	<205	0	0
24	Ceilings/Walls > 2 meters	<18	<205	0	0
25	Ceilings/Walls > 2 meters	<18	<205	0	212
26	Ceilings/Walls > 2 meters	< 18	< 205	0	32
27	Ceilings/Walls > 2 meters	<18	<205	30	155
28	Ceilings/Walls > 2 meters	<18	<205	12	0
29	Ceilings/Walls > 2 meters	<18	<205	102	248
30	Ceilings/Walls > 2 meters	<18	<205	84	0
31	Ceilings/Walls > 2 meters	< 18	< 205	56	0
32	Ceilings/Walls > 2 meters	<18	<205	42	277
	MIN	<18	<205	0	0
	MAX	<18	<205	102	569
	MEAN	<18	<205	24 4	61 3

Scan Surveys (Highest Activity Reported)

1 m^2 scans showed 102 dpm/100 cm^2 (alpha) and 569 dpm/100 cm^2 (beta)

1241

RLC Survey Area K
B881 DATA GAP ROOMS (2nd FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	2nd Floor - Equipment	< 18	< 205	0	0
2	2nd Floor - Equipment	< 18	< 205	0	0
3	2nd Floor - Equipment	< 18	< 205	0	0
4	2nd Floor - Equipment	< 18	< 205	12	0
5	2nd Floor - Equipment	< 18	< 205	0	0
6	2nd Floor - Equipment	< 18	< 205	0	0
7	2nd Floor - Equipment	< 18	< 205	0	0
8	2nd Floor - Equipment	< 18	< 205	24	0
9	2nd Floor - Equipment	< 18	< 205	12	0
10	2nd Floor - Equipment	< 18	< 205	12	0
11	2nd Floor - Equipment	< 18	< 205	0	0
12	2nd Floor - Equipment	< 18	< 205	0	0
13	2nd Floor - Equipment	< 18	< 205	12	0
14	2nd Floor - Equipment	< 18	< 205	12	0
15	2nd Floor - Equipment	< 18	< 205	6	0
16	2nd Floor - Equipment	< 18	< 205	12	0
17	2nd Floor - Equipment	< 18	< 205	0	0
18	2nd Floor - Equipment	< 18	< 205	0	0
19	2nd Floor - Equipment	< 18	< 205	6	0
20	2nd Floor - Equipment	< 18	< 205	42	0
21	2nd Floor - Equipment	< 18	< 205	0	0
22	2nd Floor - Equipment	< 18	< 205	0	0
23	2nd Floor - Equipment	< 18	< 205	30	0
24	2nd Floor - Equipment	< 18	< 205	12	0
25	2nd Floor - Equipment	< 18	< 205	30	0
26	2nd Floor - Equipment	< 18	< 205	30	0
27	2nd Floor - Equipment	< 18	< 205	0	0
28	2nd Floor - Equipment	< 18	< 205	12	0
29	2nd Floor - Equipment	< 18	< 205	42	0
30	2nd Floor - Equipment	< 18	< 205	0	0
31	2nd Floor - Equipment	< 18	< 205	18	0
32	2nd Floor - Equipment	< 18	< 205	12	0
33	2nd Floor - Equipment	< 18	< 205	48	0
34	2nd Floor - Equipment	< 18	< 205	0	0
35	2nd Floor - Equipment	< 18	< 205	42	0
36	2nd Floor - Equipment	< 18	< 205	0	0
37	2nd Floor - Equipment	< 18	< 205	0	0
38	2nd Floor - Equipment	< 18	< 205	30	0
39	2nd Floor - Equipment	< 18	< 205	0	0
40	2nd Floor - Equipment	< 18	< 205	6	0
41	2nd Floor - Equipment	< 18	< 205	6	0
42	2nd Floor - Equipment	< 18	< 205	30	0
43	2nd Floor - Equipment	< 18	< 205	36	0
44	2nd Floor - Equipment	< 18	< 205	0	0
45	2nd Floor - Equipment	< 18	< 205	0	0
46	2nd Floor - Equipment	< 18	< 205	0	0
47	2nd Floor - Equipment	< 18	< 205	228	0
48	2nd Floor - Equipment	< 18	< 205	0	0
49	2nd Floor - Equipment	< 18	< 205	0	0
50	2nd Floor - Equipment	< 18	< 205	0	0

142

RLC Survey Area K
B881 DATA GAP ROOMS (2nd FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
51	2nd Floor - Equipment	< 18	< 205	30	0
52	2nd Floor - Equipment	< 18	< 205	0	0
53	2nd Floor - Equipment	< 18	< 205	0	0
54	2nd Floor - Equipment	< 18	< 205	0	0
55	2nd Floor - Equipment	< 18	< 205	6	0
56	2nd Floor - Equipment	< 18	< 205	0	0
57	2nd Floor - Equipment	< 18	< 205	0	0
58	2nd Floor - Equipment	< 18	< 205	0	0
59	2nd Floor - Equipment	< 18	< 205	0	0
60	2nd Floor - Equipment	< 18	< 205	0	0
61	2nd Floor - Equipment	< 18	< 205	0	0
62	2nd Floor - Equipment	< 18	< 205	0	47
63	2nd Floor - Equipment	< 18	< 205	0	0
64	2nd Floor - Equipment	< 18	< 205	0	0
65	2nd Floor - Equipment	< 18	< 205	0	0
66	2nd Floor - Equipment	< 18	< 205	452	0
67	2nd Floor - Equipment	< 18	< 205	0	0
68	2nd Floor - Equipment	< 18	< 205	12	0
69	2nd Floor - Equipment	< 18	< 205	0	0
70	2nd Floor - Equipment	< 18	< 205	0	0
71	2nd Floor - Equipment	< 18	< 205	0	0
72	2nd Floor - Equipment	< 18	< 205	0	0
73	2nd Floor - Equipment	< 18	< 205	0	0
74	2nd Floor - Equipment	< 18	< 205	0	0
75	2nd Floor - Equipment	< 18	< 205	0	0
76	2nd Floor - Equipment	< 18	< 205	0	0
77	2nd Floor - Equipment	< 18	< 205	0	0
78	2nd Floor - Equipment	< 18	< 205	0	0
79	2nd Floor - Equipment	< 18	< 205	0	0
80	2nd Floor - Equipment	< 18	< 205	0	0
81	2nd Floor - Equipment	< 18	< 205	0	0
82	2nd Floor - Equipment	< 18	< 205	0	0
83	2nd Floor - Equipment	< 18	< 205	0	0
84	2nd Floor - Equipment	< 18	< 205	0	180
85	2nd Floor - Equipment	< 18	< 205	0	46
86	2nd Floor - Equipment	< 18	< 205	0	0
87	2nd Floor - Equipment	< 18	< 205	0	0
88	2nd Floor - Equipment	< 18	< 205	54	0
89	2nd Floor - Equipment	< 18	< 205	66	0
90	2nd Floor - Equipment	< 18	< 205	30	0
91	2nd Floor - Equipment	< 18	< 205	72	0
92	2nd Floor - Equipment	< 18	< 205	0	0
93	2nd Floor - Equipment	< 18	< 205	42	0
94	2nd Floor - Equipment	< 18	< 205	12	0
95	2nd Floor - Equipment	< 18	< 205	24	0
96	2nd Floor - Equipment	< 18	< 205	18	0
97	2nd Floor - Equipment	< 18	< 205	0	0
98	2nd Floor - Equipment	< 18	< 205	6	0
99	2nd Floor - Equipment	< 18	< 205	0	0
100	2nd Floor - Equipment	< 18	< 205	0	0

143

RLC Survey Area K
B881 DATA GAP ROOMS (2nd FLOOR)
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
101	2nd Floor - Equipment	< 18	< 205	0	0
102	2nd Floor - Equipment	< 18	< 205	12	0
103	2nd Floor - Equipment	< 18	< 205	0	0
104	2nd Floor - Equipment	< 18	< 205	0	0
105	2nd Floor - Equipment	< 18	< 205	0	0
106	2nd Floor - Equipment	< 18	< 205	6	0
107	2nd Floor - Equipment	< 18	< 205	0	0
108	2nd Floor - Equipment	< 18	< 205	0	0
109	2nd Floor - Equipment	< 18	< 205	24	576
110	2nd Floor - Equipment	< 18	< 205	0	0
111	2nd Floor - Equipment	< 18	< 205	6	0
112	2nd Floor - Equipment	< 18	< 205	0	0
113	2nd Floor - Equipment	< 18	< 205	0	0
114	2nd Floor - Equipment	< 18	< 205	0	0
	MIN	< 18	< 205	0	0
	MAX	< 18	< 205	452	576
	MEAN	< 18	< 205	14 3	7 4

Scan Surveys (Highest Activity Reported)

1 m^2 scans showed 452 dpm/100 cm^2 (alpha) and 576 dpm/100 cm^2 (beta)

144

ATTACHMENT E-7

B881 Consent Order Rooms

(SURVEY AREA L)

153

[redacted]

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3251	Serial #	3098
Cal Due	11/14/01	Cal Due	2/13/02	Cal Due	2/28/02
Bkg	0 4 cpmα	Bkg	3 cpmα	Bkg	1 cpmα
Efficiency	35 00 %	Efficiency	22 20 %	Efficiency	20 70 %
MDA	18 dpmα	MDA	48 dpmα	MDA	36 dpmα
Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3251	Serial #	3098
Cal Due	11/14/01	Cal Due	2/13/02	Cal Due	2/28/02
Bkg	97 4 cpmβ	Bkg	621 cpmβ	Bkg	648 cpmβ
Efficiency	39 40 %	Efficiency	32 40 %	Efficiency	30 70 %
MDA	205 dpmβ	MDA	366 dpmβ	MDA	394 dpmβ

Survey Type. Contamination
Building 881
Location Rm 137 walls below 2 meters and floor
Purpose RLC Survey

RWP # 01-881-0021

Date 10/1/01 Time 1200

RCT [redacted]

RCT [redacted]

PRN/REN # N/A

Comments Isotopes of concern are DU and PU 0 = zero or less than zero One meter scan showed no elevated activity unless noted

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total		Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Floor	< 18	< 205	12	6934	NA	N/A	N/A	N/A	N/A	N/A
2	Floor	< 18	< 205	24	464	NA	N/A	N/A	N/A	N/A	N/A
3	Floor	< 18	< 205	12	198	NA	N/A	N/A	N/A	N/A	N/A
4	Floor	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
5	Floor	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
6	Floor	< 18	< 205	18	392	NA	N/A	N/A	N/A	N/A	N/A
7	Floor	< 18	< 205	12	547	NA	N/A	N/A	N/A	N/A	N/A
8	Floor	< 18	< 205	0	205	NA	N/A	N/A	N/A	N/A	N/A
9	Floor	< 18	< 205	18	0	NA	N/A	N/A	N/A	N/A	N/A
10	Floor	< 18	< 205	18	533	NA	N/A	N/A	N/A	N/A	N/A
11	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
12	Wall	< 18	< 205	6	0	NA	N/A	N/A	N/A	N/A	N/A
13	Wall	< 18	< 205	6	2786	NA	N/A	N/A	N/A	N/A	N/A
14	Wall	< 18	< 205	18	0	NA	N/A	N/A	N/A	N/A	N/A
15	Wall	< 18	< 205	0	659	NA	N/A	N/A	N/A	N/A	N/A
16	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A

Date Reviewed 10-2-01 **RS Supervision** [redacted]

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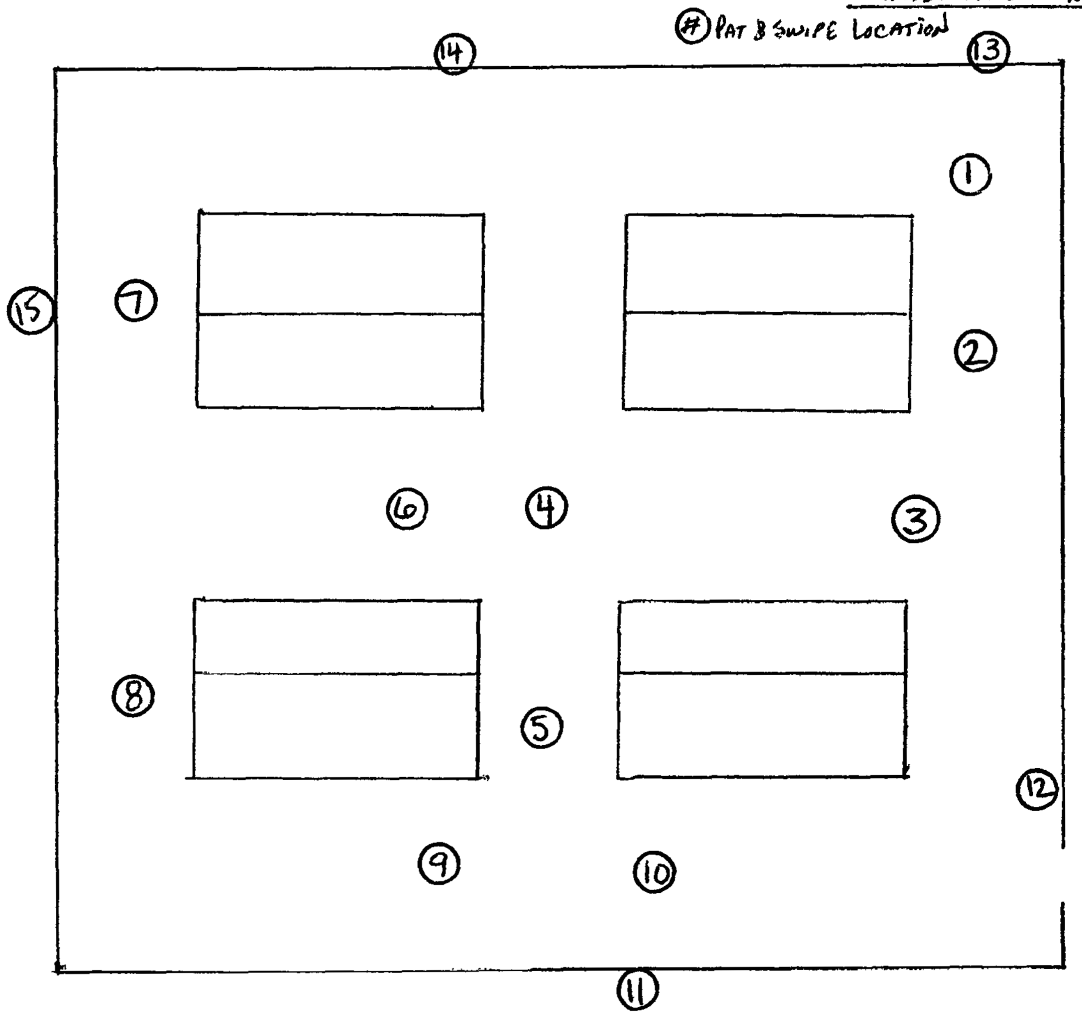
Drawing Showing Survey Points

LESS THAN 2 METERS WALLS & FLOOR

Rm 137
By Paul Miller, Ed Hien
DATE 10/1/01 PAGE 2 of 2
PURPOSE. RLC Survey

(#) PAT & SWIPE LOCATION



↓ NORTH

[redacted]

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3251	Serial #	3098
Cal Due	11/14/01	Cal Due	2/13/02	Cal Due	2/28/02
Bkg	0 4 cpmα	Bkg	3 cpmα	Bkg	1 cpmα
Efficiency	35 00 %	Efficiency	22 20 %	Efficiency	20 70 %
MDA	18 dpmα	MDA	48 dpmα	MDA	36 dpmα
Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3251	Serial #	3098
Cal Due	11/14/01	Cal Due	2/13/02	Cal Due	2/28/02
Bkg	97 4 cpmβ	Bkg	621 cpmβ	Bkg	648 cpmβ
Efficiency	39 40 %	Efficiency	32 40 %	Efficiency	30 70 %
MDA	205 dpmβ	MDA	366 dpmβ	MDA	394 dpmβ

Survey Type Contamination

Building 881

Location Rm 137 walls above 2 meters and ceilings

Purpose RLC Survey

RWP # 01-881-0021

Date 10/1/01 Time 1200

RCT [redacted]

RCT [redacted]

Print name Signature Emp #

PRN/REN # N/A

Comments Isotopes of concern are DU and PU 0 = zero or less than zero

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta	Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
2	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
3	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
4	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
5	Wall	< 18	< 205	18	0	NA	N/A	N/A	N/A	N/A	N/A
6	Wall	< 18	< 205	0	389	NA	N/A	N/A	N/A	N/A	N/A
7	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
8	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
9	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
10	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
11	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
12	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
13	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
14	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
15	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
16	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A

Date Reviewed 10-2-01 **RS Supervision** [redacted]

Print Name Signature Emp #

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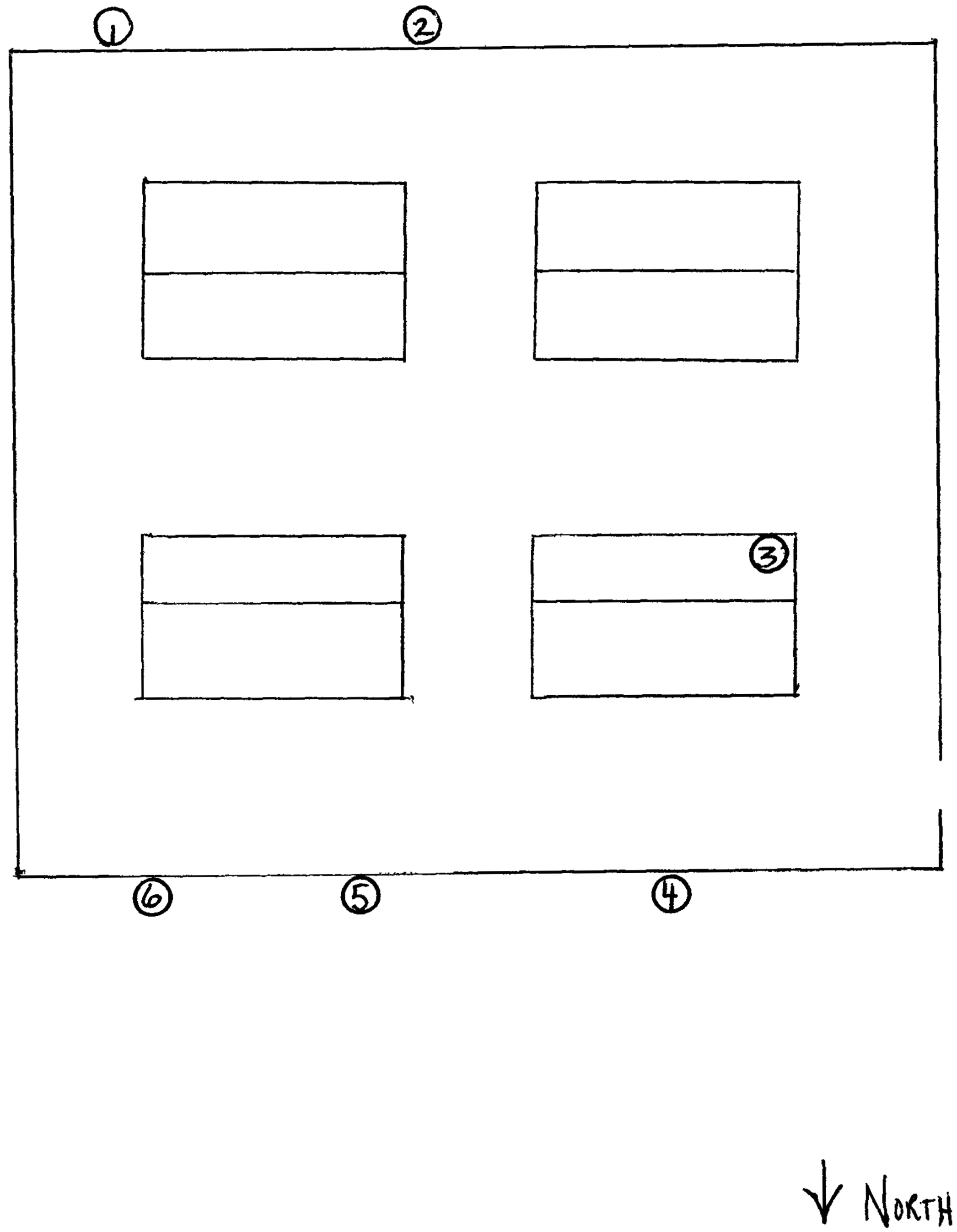
Drawing Showing Survey Points

Rm 137
BY Paul Miller, Ed Hien
DATE 10/1/01 page 2 of 2
Purpose. RLC Survey

Above 2 meters Walls Ceiling



[redacted]

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3251	Serial #	3098
Cal Due	11/14/01	Cal Due	2/13/02	Cal Due	2/28/02
Bkg	0 4 cpmα	Bkg	3 cpmα	Bkg	1 cpmα
Efficiency	35 00 %	Efficiency	22 20 %	Efficiency	20 70 %
MDA	18 dpmα	MDA	48 dpmα	MDA	36 dpmα
Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3251	Serial #	3098
Cal Due	11/14/01	Cal Due	2/13/02	Cal Due	2/28/02
Bkg	97 4 cpmβ	Bkg	621 cpmβ	Bkg	648 cpmβ
Efficiency	39 40 %	Efficiency	32 40 %	Efficiency	30 70 %
MDA	205 dpmβ	MDA	366 dpmβ	MDA	394 dpmβ

Survey Type Contamination
Building 881
Location Rm 137 Equipment
Purpose RLC Survey

RWP # 01-881-0021

Date 10/1/01 Time 1200

[redacted]

PRN/REN # N/A

Comments· Isotopes of concern are DU and PU 0 = zero or less than zero One meter scan showed no elevated activity unless noted

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta	Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	o/s consent cabinet # 1 door	< 18	< 205	0	34776	NA	N/A	N/A	N/A	N/A	N/A
2	o/s consent cabinet # 1 door	< 18	< 205	18	15908	NA	N/A	N/A	N/A	N/A	N/A
3	hood ledge	< 18	< 205	0	277	NA	N/A	N/A	N/A	N/A	N/A
4	hood ledge	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
5	cabinet	< 18	< 205	30	176	NA	N/A	N/A	N/A	N/A	N/A
6	cabinet	< 18	< 205	24	2095	NA	N/A	N/A	N/A	N/A	N/A
7	panel door	< 18	< 205	6	0	NA	N/A	N/A	N/A	N/A	N/A
8	control panel	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
9	ledge of control panel	< 18	< 205	78	0	NA	N/A	N/A	N/A	N/A	N/A
10	panel door	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
11	ladder	< 18	< 205	30	0	NA	N/A	N/A	N/A	N/A	N/A
12	hood ledge	< 18	< 205	18	0	NA	N/A	N/A	N/A	N/A	N/A
13	ladder	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
14	side of hood	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
15	cabinet	< 18	< 205	6	0	NA	N/A	N/A	N/A	N/A	N/A
16		NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	[redacted]							

Date Reviewed 10-2-01 **RS Supervision** [redacted]

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Drawing Showing Survey Points

EQUIPMENT SURVEY

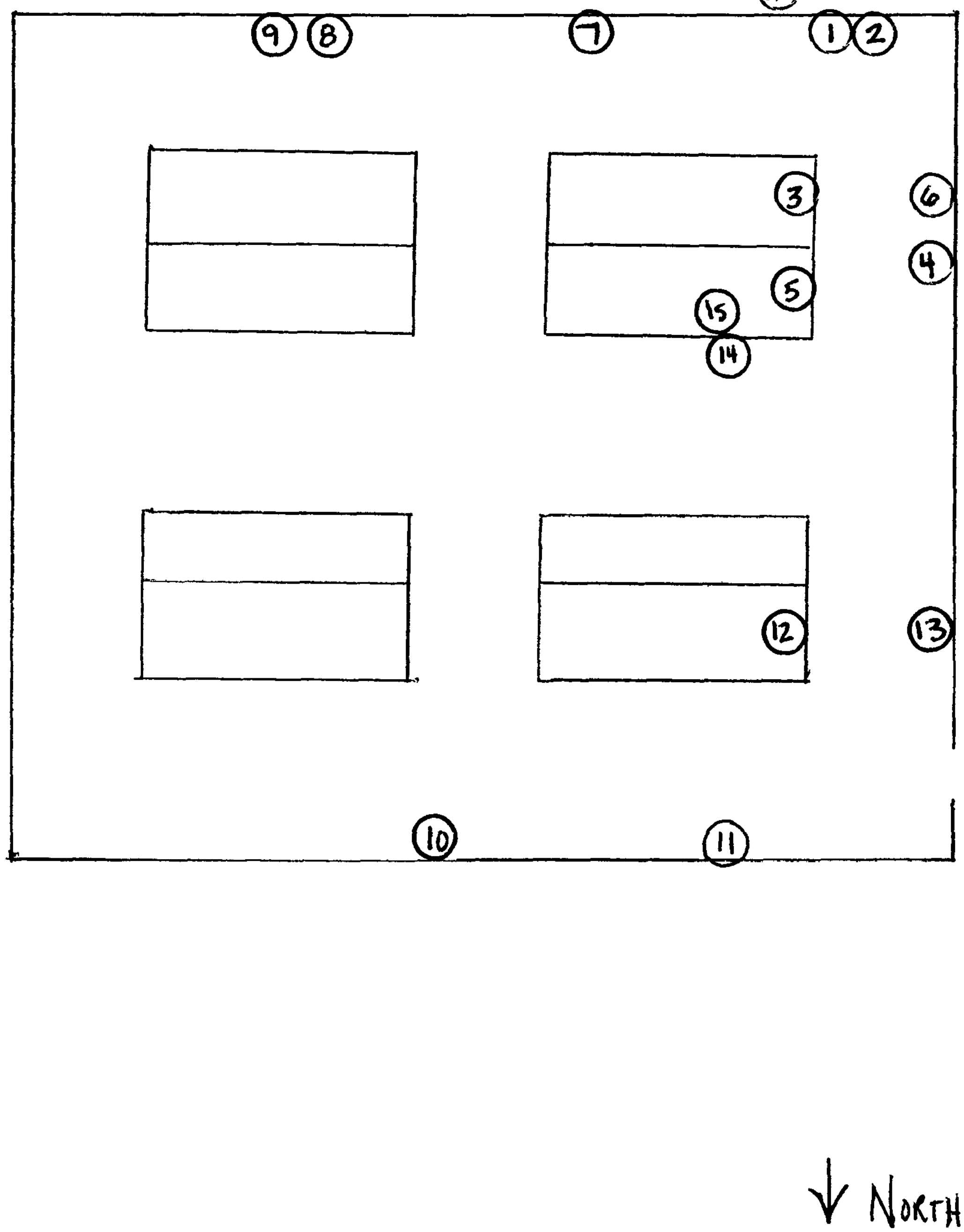
Rm 137

BY Paul Miller, ED HIEN

DATE 10/1/01 PAGE 2 of 2

PURPOSE RLC SURVEY

(#) = SWIPE & LOCATION



INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NA
Model	2929	Model	DP-6	Model	NA
Serial #	147742	Serial #	3101	Serial #	NA
Cal Due	3/4/02	Cal Due	10/24/01	Cal Due	NA
Bkg	0 1 cpmα	Bkg	1 cpmα	Bkg	NA cpmα
Efficiency	33 50 %	Efficiency	21 30 %	Efficiency	NA %
MDA	18 dpmα	MDA	35 dpmα	MDA	NA dpmα

Mfg	Ludlum	Mfg	NE Electra	Mfg	NA
Model	2929	Model	DP-6	Model	NA
Serial #	147742	Serial #	3101	Serial #	NA
Cal Due	3/4/02	Cal Due	10/24/01	Cal Due	NA
Bkg	68 cpmβ	Bkg	541 cpmβ	Bkg	NA cpmα
Efficiency	35 80 %	Efficiency	30 00 %	Efficiency	NA %
MDA	205 dpmβ	MDA	370 dpmβ	MDA	NA dpmα

Survey Type Contamination

Building 881

Location Rm 127A walls below 2 meters and floor

Purpose RLC Survey

RWP # 01-881-~~0021~~ 0023 JA 10-11-01

Date 10/9/01 Time 1230

RCT [redacted]

Print name Signature Emp #

RCT NA / NA / NA

Print name Signature Emp #

PRN/REN # N/A

Comments Isotopes of concern are DU and PU 0 = zero or less than zero One meter scan showed no elevated activity

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total		Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	floor	< 18	< 205	12	247	NA	N/A	N/A	N/A	N/A	N/A
2	floor	< 18	< 205	12	143	NA	N/A	N/A	N/A	N/A	N/A
3	floor	< 18	< 205	18	157	NA	N/A	N/A	N/A	N/A	N/A
4	floor	< 18	< 205	18	217	NA	N/A	N/A	N/A	N/A	N/A
5	Wall	< 18	< 205	48	0	NA	N/A	N/A	N/A	N/A	N/A
6	Wall	< 18	< 205	30	0	NA	N/A	N/A	N/A	N/A	N/A
7	Wall	< 18	< 205	12	1580	NA	N/A	N/A	N/A	N/A	N/A
8	Wall	< 18	< 205	36	0	NA	N/A	N/A	N/A	N/A	N/A
9	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
10	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
11	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
12	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
13	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
14	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
15	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
16	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A

Date Reviewed 10-11-01 **RS Supervision** [redacted]

160

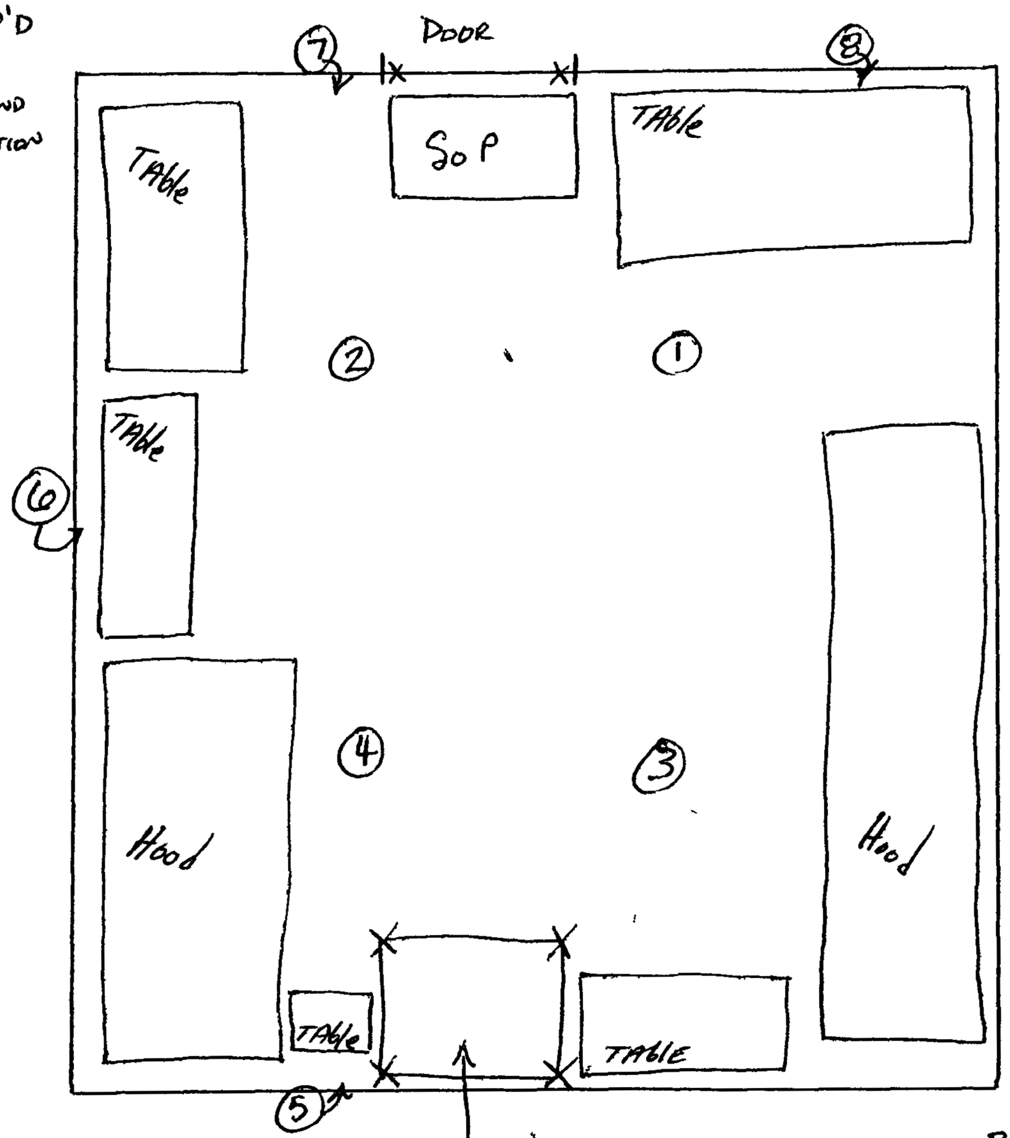
[redacted]

Drawing Showing Survey Points

RLC Survey of Room 127A
Below 2meters and Floor Survey

Room Posted
CA
RWP REQ'D

(#) Swipe and Pat Location



CABINET POSTED
RA
RWP REQ'D
DOSIMETRY REQ'D

By P.Miller
10/9/01

[illegible]

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NA
Model	2929	Model	DP-6	Model	NA
Serial #	147742	Serial #	3101	Serial #	NA
Cal Due	3/4/02	Cal Due	10/24/01	Cal Due	NA
Bkg	0 1 cpmα	Bkg	1 cpmα	Bkg	NA cpmα
Efficiency	33 50 %	Efficiency	21 30 %	Efficiency	NA %
MDA	18 dpmα	MDA	35 dpmα	MDA	NA dpmα
Mfg	Ludlum	Mfg	NE Electra	Mfg	NA
Model	2929	Model	DP-6	Model	NA
Serial #	147742	Serial #	3101	Serial #	NA
Cal Due	3/4/02	Cal Due	10/24/01	Cal Due	NA
Bkg	68 cpmβ	Bkg	541 cpmβ	Bkg	NA cpmα
Efficiency	35 80 %	Efficiency	30 00 %	Efficiency	NA %
MDA	205 dpmβ	MDA	370 dpmβ	MDA	NA dpmα

Survey Type Contamination

Building 881

Location Rm 127A walls above 2 meters and ceilings

Purpose RLC Survey

RWP # 01-881-~~0021~~ 0023 JA 10-11-01

Date 10/9/01 Time 1230

RC[redacted]

Print name Signature Emp #

RCT NA / NA / NA

Print name Signature Emp #

PRN/REN # N/A

Comments Isotopes of concern are DU and PU 0 = zero or less than zero

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total		Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Wall	< 18	< 205	12	0	NA	N/A	N/A	N/A	N/A	N/A
2	Wall	< 18	< 205	12	0	NA	N/A	N/A	N/A	N/A	N/A
3	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
4	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
5	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
6	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
7	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
8	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
9	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
10	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
11	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
12	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
13	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
14	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
15	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
16	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A

Date Reviewed 10-11-01 **RS Supervision** [redacted]

162

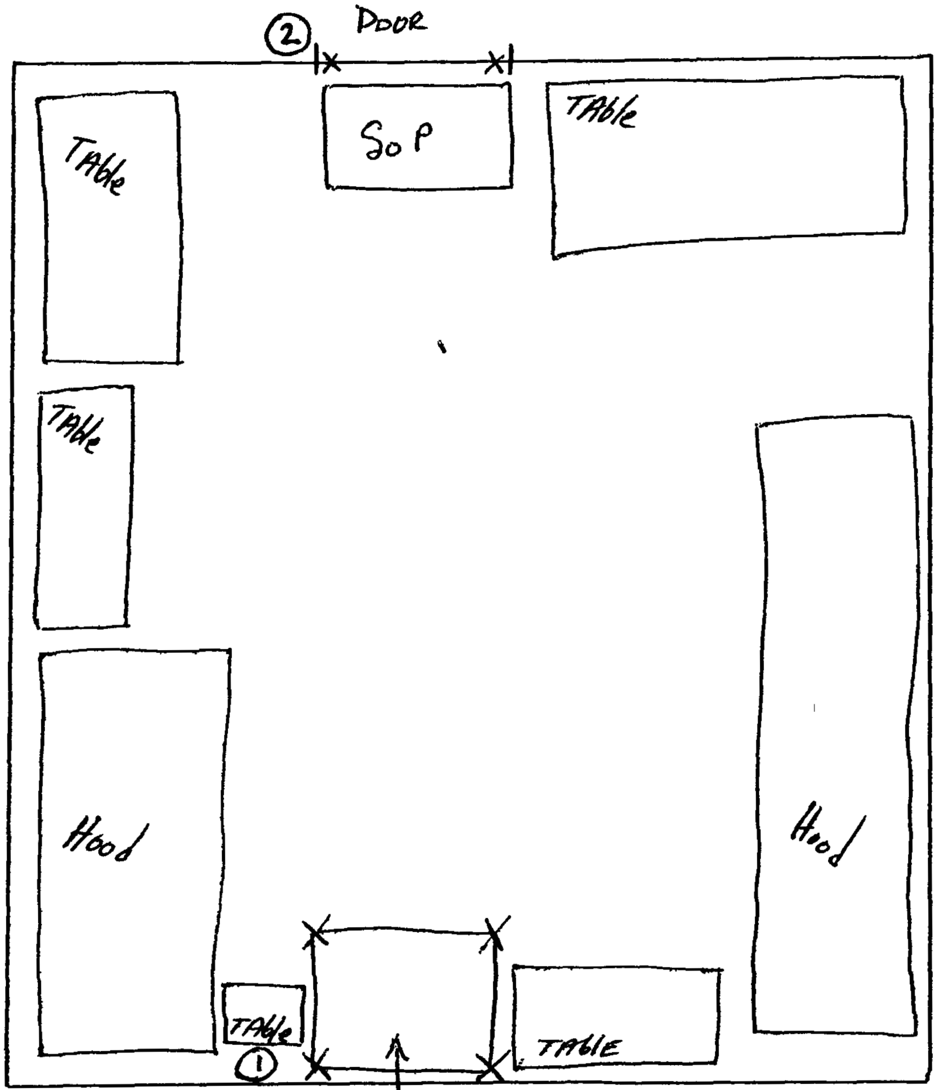
[redacted]

Drawing Showing Survey Points

RLC Survey of Room 127A
ABOVE 2 METERS ON WALLS AND CEILING

Room Posted
CA
RWP REQ'D

(#) SWIPE AND PAT LOCATION



CABINET POSTED
RA
RWP REQ'D
DOSIMETRY REQ'D

By P. Miller
10/9/01

No3

[redacted]

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NA
Model	2929	Model	DP-6	Model	NA
Serial #	147742	Serial #	3101	Serial #	NA
Cal Due	3/4/02	Cal Due	10/24/01	Cal Due	NA
Bkg	0 1 cpmα	Bkg	1 cpmα	Bkg	NA cpmα
Efficiency	33 50 %	Efficiency	21 30 %	Efficiency	NA %
MDA	18 dpmα	MDA	35 dpmα	MDA	NA dpmα

Mfg	Ludlum	Mfg	NE Electra	Mfg	NA
Model	2929	Model	DP-6	Model	NA
Serial #	147742	Serial #	3101	Serial #	NA
Cal Due	3/4/02	Cal Due	10/24/01	Cal Due	NA
Bkg	68 cpmβ	Bkg	541 cpmβ	Bkg	NA cpmα
Efficiency	35 80 %	Efficiency	30 00 %	Efficiency	NA %
MDA	205 dpmβ	MDA	370 dpmβ	MDA	NA dpmα

Survey Type Contamination

Building 881

Location Rm 127A Equipment

Purpose RLC Survey

RWP # 01-881-~~0021~~ 0023 JA 10-11-01

Date 10/9/01 Time 1230

R[redacted]

RCT NA / NA / NA

Print name / Signature / Emp #

PRN/REN # N/A

Comments Isotopes of concern are DU and PU 0 = zero or less than zero One meter scan showed no elevated activity

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta	Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	table	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
2	hood	< 18	< 205	36	0	NA	N/A	N/A	N/A	N/A	N/A
3	cabinet	< 18	< 205	24	0	NA	N/A	N/A	N/A	N/A	N/A
4	hood	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
5	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
6	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
7	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
8	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
9	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
10	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
11	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
12	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
13	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
14	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
15	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
16	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A

Date Reviewed 10-11-01 **RS Supervision** [redacted]

Print Name / Signature / Emp #

164

[redacted]

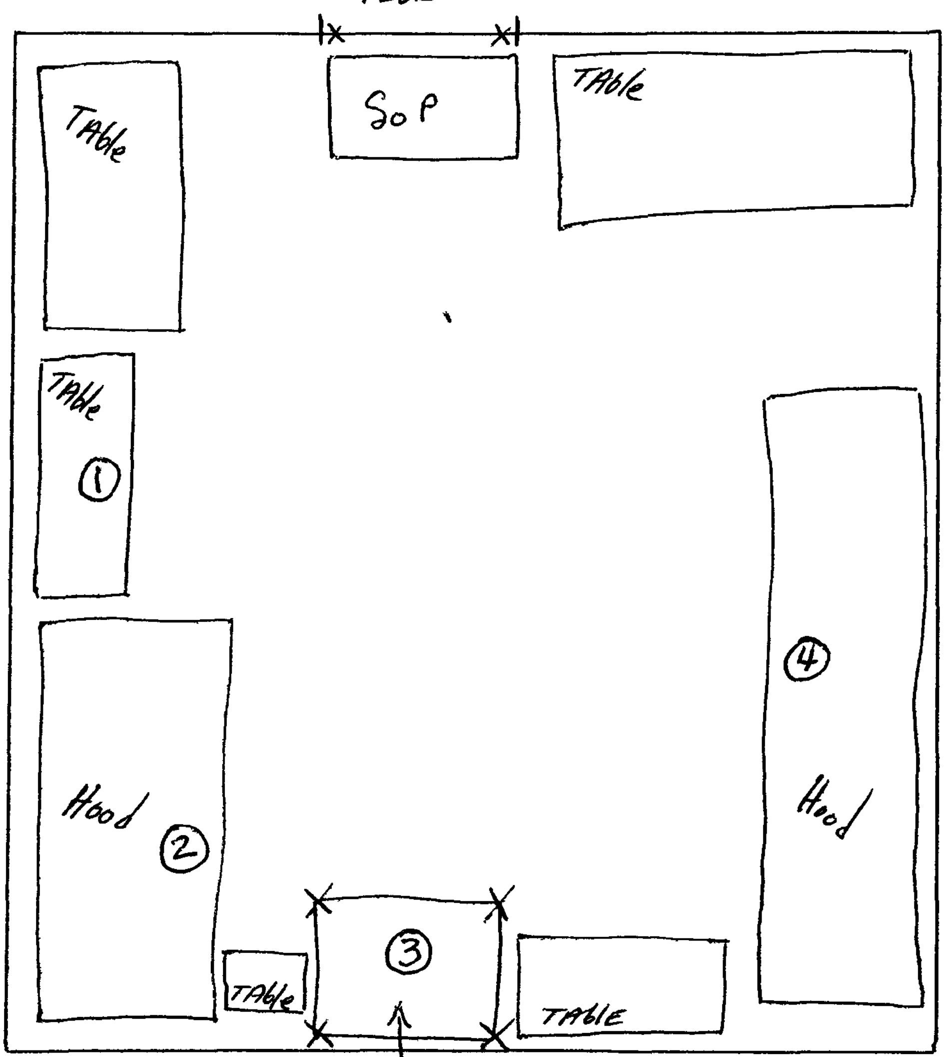
Drawing Showing Survey Points

RLC Survey of Room 127A
EQUIPMENT SURVEY

Room Posted
CA
RWP REQ'D

(#) SWIPE AND PAT LOCATION

DOOR



CABINET POSTED
RA
RWP REQ'D
DOSIMETRY REQ'D

By P.Miller
10/9/01

[redacted]

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3101	Serial #	3124
Cal Due	11/14/01	Cal Due	10/24/01	Cal Due	2/10/02
Bkg	0 5 cpmα	Bkg	3 cpmα	Bkg	3 cpmα
Efficiency	35 00 %	Efficiency	21 30 %	Efficiency	21 60 %
MDA	18 dpmα	MDA	51 dpmα	MDA	50 dpmα

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electr [redacted]
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3101	Serial #	312
Cal Due	11/14/01	Cal Due	10/24/01	Cal Due	2/10/
Bkg	97 4 cpmβ	Bkg	513 cpmβ	Bkg	630 cp
Efficiency	39 40 %	Efficiency	30 00 %	Efficiency	31 20
MDA	205 dpmβ	MDA	360 dpmβ	MDA	383 dpmβ

Survey Type Contamination

Building 881

Location Rm 233 walls above 2 meters and ceilings

Purpose RLC Survey

RWP # 01-881-0021

Date 9/27/01 Time 0800

[redacted]

PRN/REN # N/A

Comments Isotopes of concern are DU and PU 0 = zero or less than zero

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta	Swipe #	Location / Description Results in DPM/100sq cm	Removable Alpha	Removable Beta	Total Alpha	Total Beta
1	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
2	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
3	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
4	Wall	< 18	< 205	12	0	NA	N/A	N/A	N/A	N/A	N/A
5	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
6	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
7	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
8	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
9	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
10	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
11	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
12	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
13	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
14	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
15	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
16	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A

Date Reviewed 10-2-01 **RS Supervision** [redacted]

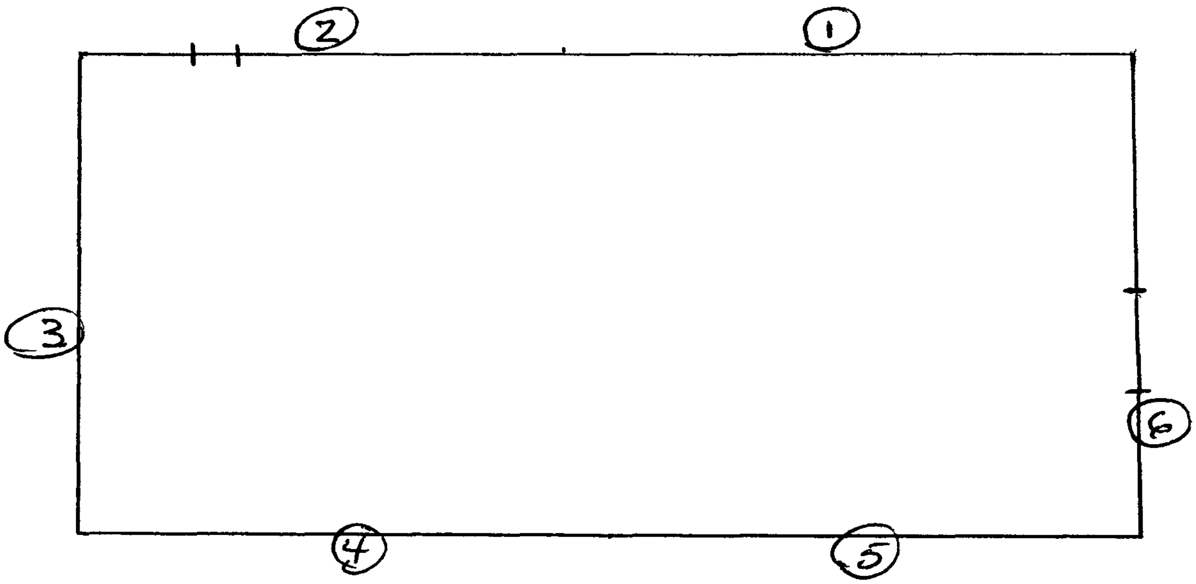
Drawing Showing Survey Points

Above 2meters walls
& Ceiling

RM 233

- Swipe AND Pat Location

By Paul Miller
B Jestes



[redacted]

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3101	Serial #	3124
Cal Due	11/14/01	Cal Due	10/24/01	Cal Due	2/10/02
Bkg	0 5 cpmα	Bkg	3 cpmα	Bkg	3 cpmα
Efficiency	35 00 %	Efficiency	21 30 %	Efficiency	21 60 %
MDA	18 dpmα	MDA	51 dpmα	MDA	50 dpmα
Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3101	Serial #	3124
Cal Due	11/14/01	Cal Due	10/24/01	Cal Due	2/10/02
Bkg	97 4 cpmβ	Bkg	513 cpmβ	Bkg	630 cpmβ
Efficiency	39 40 %	Efficiency	30 00 %	Efficiency	31 20 %
MDA	205 dpmβ	MDA	360 dpmβ	MDA	383 dpmβ

Survey Type Contamination
Building 881
Location Rm 233 Equipment
Purpose RLC Survey

RWP # 01-881-0021

Date 9/27/01 Time 0800

RC [redacted]

RC [redacted]

PRN/REN # N/A
Comments Isotopes of concern are DU and PU 0 = zero or less than zero

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total		Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	o/s consent cabinet # 3 door	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
2	o/s consent cabinet # 4 door	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
3	vent duct	< 18	< 205	30	0	NA	N/A	N/A	N/A	N/A	N/A
4	ladder	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
5	fan guard	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
6	glove box	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
7	rgf - 1 panel	< 18	< 205	6	0	NA	N/A	N/A	N/A	N/A	N/A
8	filter	< 18	< 205	6	0	NA	N/A	N/A	N/A	N/A	N/A
9	electrical panel	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
10	pipe	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
11	fuse panel	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
12	pipe	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
13	t1-2e -9 panel	< 18	< 205	12	0	NA	N/A	N/A	N/A	N/A	N/A
14	electrical panel	< 18	< 205	42	0	NA	N/A	N/A	N/A	N/A	N/A
15	electrical outlet	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
16	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	[redacted]						

Date Reviewed 10-2-01 **RS Supervision** [redacted]

168

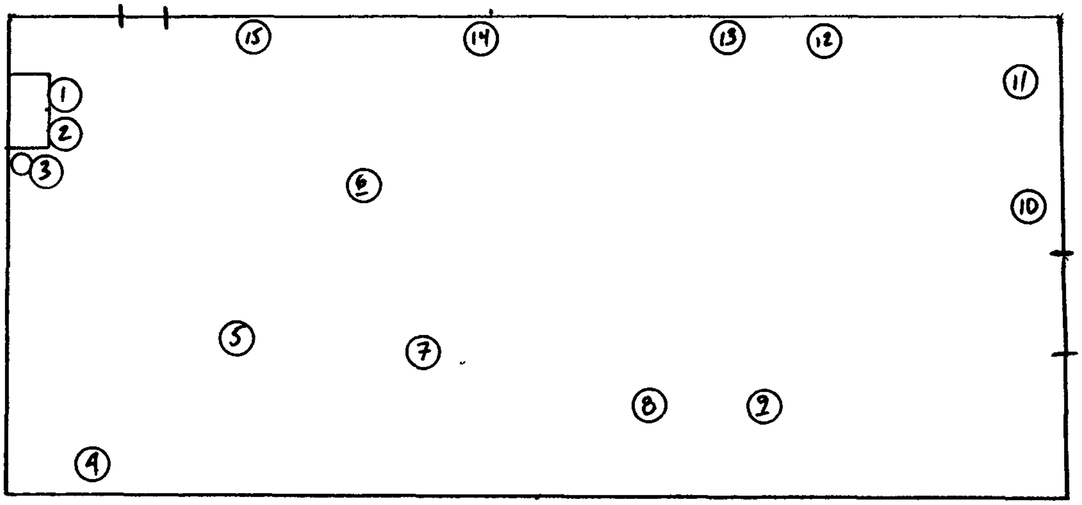
Drawing Showing Survey Points

EQUIPMENT SURVEY

RM 233

(#) Swipe AND PAT LOCATION

By Paul Miller
B. JESTES



 9/27/01 10 17 AM

INSTRUMENT DATA

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3101	Serial #	3124
Cal Due	11/14/01	Cal Due	10/24/01	Cal Due	2/10/02
Bkg	0 5 cpmα	Bkg	3 cpmα	Bkg	3 cpmα
Efficiency	35 00 %	Efficiency	21 30 %	Efficiency	21 60 %
MDA	18 dpmα	MDA	51 dpmα	MDA	50 dpmα

Mfg	Ludlum	Mfg	NE Electra	Mfg	NE Electra
Model	2929	Model	DP-6	Model	DP-6
Serial #	147744	Serial #	3101	Serial #	3124
Cal Due	11/14/01	Cal Due	10/24/01	Cal Due	2/10/02
Bkg	97 4 cpmβ	Bkg	513 cpmβ	Bkg	630 cpmβ
Efficiency	39 40 %	Efficiency	30 00 %	Efficiency	31 20 %
MDA	205 dpmβ	MDA	360 dpmβ	MDA	383 dpmβ

Survey Type Contamination
Building 881
Location Rm 233 walls below 2 meters and floor
Purpose RLC Survey

RWP # 01-881-0021

Date 9/27/01 Time 0800

RC [redacted]

RC [redacted]

PRN/REN # : N/A
Comments Isotopes of concern are DU and PU 0 = zero or less than zero

SURVEY RESULTS

Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total		Swipe #	Location / Description Results in DPM/100sq cm	Removable		Total	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Floor	< 18	< 205	36	0	NA	N/A	N/A	N/A	N/A	N/A
2	Floor	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
3	Floor	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
4	Floor	< 18	< 205	12	0	NA	N/A	N/A	N/A	N/A	N/A
5	Floor	< 18	< 205	24	169	NA	N/A	N/A	N/A	N/A	N/A
6	Floor	< 18	< 205	12	80	NA	N/A	N/A	N/A	N/A	N/A
7	Floor	< 18	< 205	0	288	NA	N/A	N/A	N/A	N/A	N/A
8	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
9	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
10	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
11	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
12	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
13	Wall	< 18	< 205	0	0	NA	N/A	N/A	N/A	N/A	N/A
14	Wall	< 18	< 205	42	450	NA	N/A	N/A	N/A	N/A	N/A
15	Wall	< 18	< 205	0	58	NA	N/A	N/A	N/A	N/A	N/A
16	End of survey	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
17	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
18	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
19	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
20	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
21	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
22	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
23	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
24	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A
25	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A

Date Reviewed 10-2-01 **RS Supervision** [redacted]

170

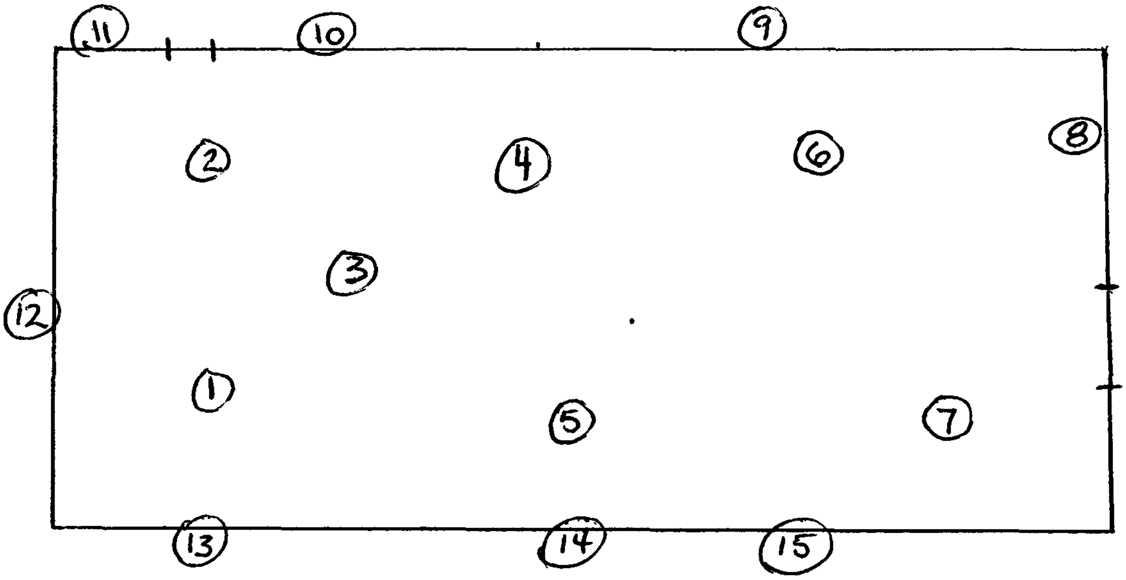
Drawing Showing Survey Points

<2 meters Walls AND Floor

RM 233

(#) - Swipe AND PAT LOCATION

By P Miller
B. JESTES



ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg	Eberline	Mfg	Eberline	Mfg	N/A
Model	SAC-4	Model	BC-4	Model	N/A
Serial #	961	Serial #	763	Serial #	N/A
Cal Due	11-1-01	Cal Due	11-19-01	Cal Due	N/A
Bkg	0 2 cpm	Bkg	43 6 cpm	Bkg	N/A
Eff	33%	Eff	25%	Eff	N/A
MDA	20	MDA	200	MDA	N/A
Mfg	N/A	Mfg	N/A	Mfg	N/A
Model	N/A	Model	N/A	Model	N/A
Serial #	N/A	Serial #	N/A	Serial #	N/A
Cal Due	N/A	Cal Due	N/A	Cal Due	N/A
Bkg	N/A	Bkg	N/A	Bkg	N/A
Eff	N/A	Eff	N/A	Eff	N/A
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: α,β contamination
Building 881
Location Rm. 114A, 15A
Purpose Initial entry
RWP # 01-881-0023

Date 9-19-01 Time 1400

[redacted]

N/A / N/A / N/A
RCT Name Signature Employee #

PRN/REN # N/A
Comments: Initial entry into consent rooms 114A and 15A

SURVEY RESULTS

SWIPE #	LOCATION	ALPHA SWIPE DPM/100CM2	ALPHA DIRECT DPM/100CM2	ALPHA WIPE DPM/WIPE	BETA SWIPE DPM/100CM2	BETA DIRECT DPM/100CM2	BETA WIPE DPM/WIPE
1	114A Floor	<20	N/A	N/A	<200	N/A	N/A
2	114A Floor	<20	N/A	N/A	<200	N/A	N/A
3	114A Floor on plastic	<20	N/A	N/A	<200	N/A	N/A
4	114A Floor under wood by threshold	<20	N/A	N/A	<200	N/A	N/A
5	114A door, I/S	<20	N/A	N/A	<200	N/A	N/A
6	114A door, I/S	<20	N/A	N/A	<200	N/A	N/A
7	15A Floor	<20	N/A	N/A	<200	N/A	N/A
8	15A Floor	<20	N/A	N/A	<200	N/A	N/A
9	15A Floor	<20	N/A	N/A	<200	N/A	N/A
10	15A piping on floor	<20	N/A	N/A	<200	N/A	N/A
11	15A Door, I/S	<20	N/A	N/A	<200	N/A	N/A
12	15A Door, I/S	<20	N/A	N/A	<200	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Date Reviewed 9/20/01 RS Supervisio[redacted]

[illegible]

INSTRUMENT DATA						Survey Type: α,β contamination
Mfg.	Eberline	Mfg.	Eberline	Mfg.	NE	Building: 881
Model	SAC-4	Model	BC-4	Model	Electra	Location: Rm. 114A
Serial #	961	Serial #	763	Serial #	2136	Purpose: Initial entry/characterization
Cal Due	11-1-01	Cal Due	11-19-01	Cal Due	1-5-02	
Bkg.	0 6 cpm	Bkg.	37 4 cpm	Bkg.	3α, 597β	RWP #: 01-881-0023
Eff.	33%	Eff.	25%	Eff.	21 2α,32.3β	
MDA	20	MDA	200	MDA	44α, 447β	

						Date 9-20-01 Time 1400
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A	[redacted]
Model	N/A	Model	N/A	Model	N/A	
Serial #	N/A	Serial #	N/A	Serial #	N/A	
Cal Due	N/A	Cal Due	N/A	Cal Due	N/A	
Bkg.	N/A	Bkg.	N/A	Bkg.	N/A	
Eff.	N/A	Eff.	N/A	Eff.	N/A	
MDA	N/A	MDA	N/A	MDA	N/A	RCT Name / Signature / Employee #

PRN/REN # N/A

Comments:

SURVEY RESULTS

SWIPE	LOCATION	ALPHA SWIPE	ALPHA DIRECT	ALPHA WIPE	BETA SWIPE	BETA DIRECT	BETA WIPE
#	Denoted on survey map	DPM/100CM2	DPM/100CM2	DPM/WIPE	DPM/100CM2	DPM/100CM2	DPM/WIPE
1	Floor	<20	<44	N/A	<200	<447	N/A
2	Floor	<20	<44	N/A	<200	<447	N/A
3	Equipment base/stand	<20	<44	N/A	<200	<447	N/A
4	Milling machine	<20	<44	N/A	<200	<447	N/A
5	Floor	<20	<44	N/A	<200	<447	N/A
6	Side of air plenum/pipe	<20	<44	N/A	<200	<447	N/A
7	Floor	<20	<44	N/A	<200	<447	N/A
8	Floor	<20	<44	N/A	<200	<447	N/A
9	Floor	<20	<44	N/A	<200	<447	N/A
10	Crate	<20	<44	N/A	<200	<447	N/A
11	Equipment base/stand	<20	<44	N/A	<200	<447	N/A
12	Floor	<20	<44	N/A	<200	<447	N/A
13	Floor	<20	<44	N/A	<200	<447	N/A
14	Equipment	<20	<44	N/A	<200	<447	N/A
15	Power converter	<20	[illegible]	N/A	<200	<447	N/A
16	Floor, by crystal precipitate	<20	<44	N/A	<200	<447	N/A
17	Equipment base/stand	<20	<44	N/A	<200	<447	N/A

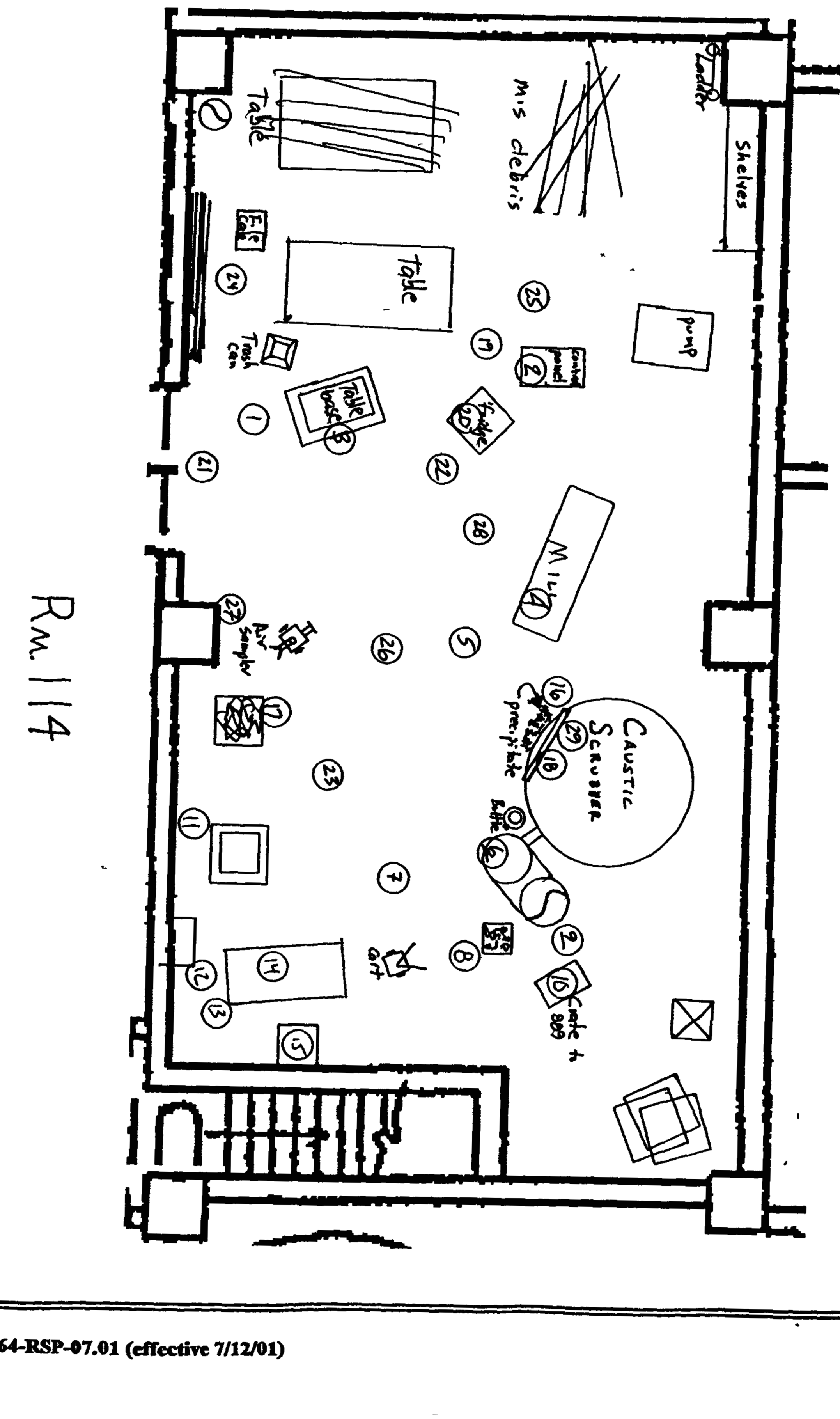
Date Reviewed 9/24/01 RS Supervision [redacted]

Print Name Signature Emp #

RADIOLOGICAL SAFETY
SURVEY RESULTS

SWIPE	LOCATION	ALPHA SWIPE	ALPHA DIRECT	ALPHA WIPE	BETA SWIPE	BETA DIRECT	BETA WIPE
#	Denoted on survey map	DPM/100CM2	DPM/100CM2	DPM/WIPE	DPM/100CM2	DPM/100CM2	DPM/WIPE
18	Hatch on scrubber	<20	[redacted]	N/A	<200	<447	N/A
19	Floor	<20	<44	N/A	<200	<447	N/A
20	Refrigerator	<20	<44	N/A	<200	<447	N/A
21	Floor	<20	[redacted]	N/A	<200	<447	N/A
22	Floor	<20	<44	N/A	<200	<447	N/A
23	Floor	<20	<44	N/A	<200	<447	N/A
24	Equipment base/stand	<20	<44	N/A	<200	<447	N/A
25	Floor	<20	<44	N/A	<200	<447	N/A
26	Ceiling	<20	<44	N/A	<200	<447	N/A
27	Column	<20	<44	N/A	<200	<447	N/A
28	Ceiling	<20	[redacted]	N/A	<200	<447	N/A
29	Side of Scrubber	<20	[redacted]	N/A	<200	<447	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Drawing Showing Survey Points



RADIOLOGICAL SAFETY
SURVEY RESULTS

SWIPE	LOCATION	ALPHA SWIPE	DIRECT	WIPE	BETA SWIPE	DIRECT	WIPE
#	Denoted on survey map	DPM/100CM2	DPM/100CM2	DPM/WIPE	DPM/100CM2	DPM/100CM2	DPM/WIPE
18	Wall	50	486	N/A	<205	630	N/A
19	Wall	<18	90	N/A	<205	<447	N/A
20	Wall	<18	378	N/A	<205	<447	N/A
21	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	N/A	N/A	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A
31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
33	N/A	N/A	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A	N/A	N/A
35	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A	N/A	N/A
37	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A	N/A	N/A
39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
41	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A	N/A	N/A
43	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A	N/A	N/A
47	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
49	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[illegible]

INSTRUMENT DATA

Mfg.	Ludlum	Mfg.	Ludlum	Mfg.	NE
Model	2929	Model	2929	Model	Electra
Serial #	147727	Serial #	147727	Serial #	3141
Cal Due	2-2-02	Cal Due	2-2-02	Cal Due	12-28-01
Bkg.	0 3 cpm	Bkg.	97 1 cpm	Bkg.	3α, 597β
Eff.	33 6%	Eff.	41 3 %	Eff.	21 0α, 31 0β
MDA	18	MDA	200	MDA	44α, 447β

Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model	N/A	Model	N/A	Model	N/A
Serial #	N/A	Serial #	N/A	Serial #	N/A
Cal Due	N/A	Cal Due	N/A	Cal Due	N/A
Bkg.	N/A	Bkg.	N/A	Bkg.	N/A
Eff.	N/A	Eff.	N/A	Eff.	N/A
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: α,β contamination
Building 881
Location. Rm. 15A
Purpose. Initial entry/characterization
RWP # 01-881-0023

Date 9-25-01 **Time** 1200

[redacted]

PRN/REN # N/A
Comments: Isotopes of concern are Pu and DU
Area deposted from ARA, ~~HCA~~ HCA to CA, RWP Req'd

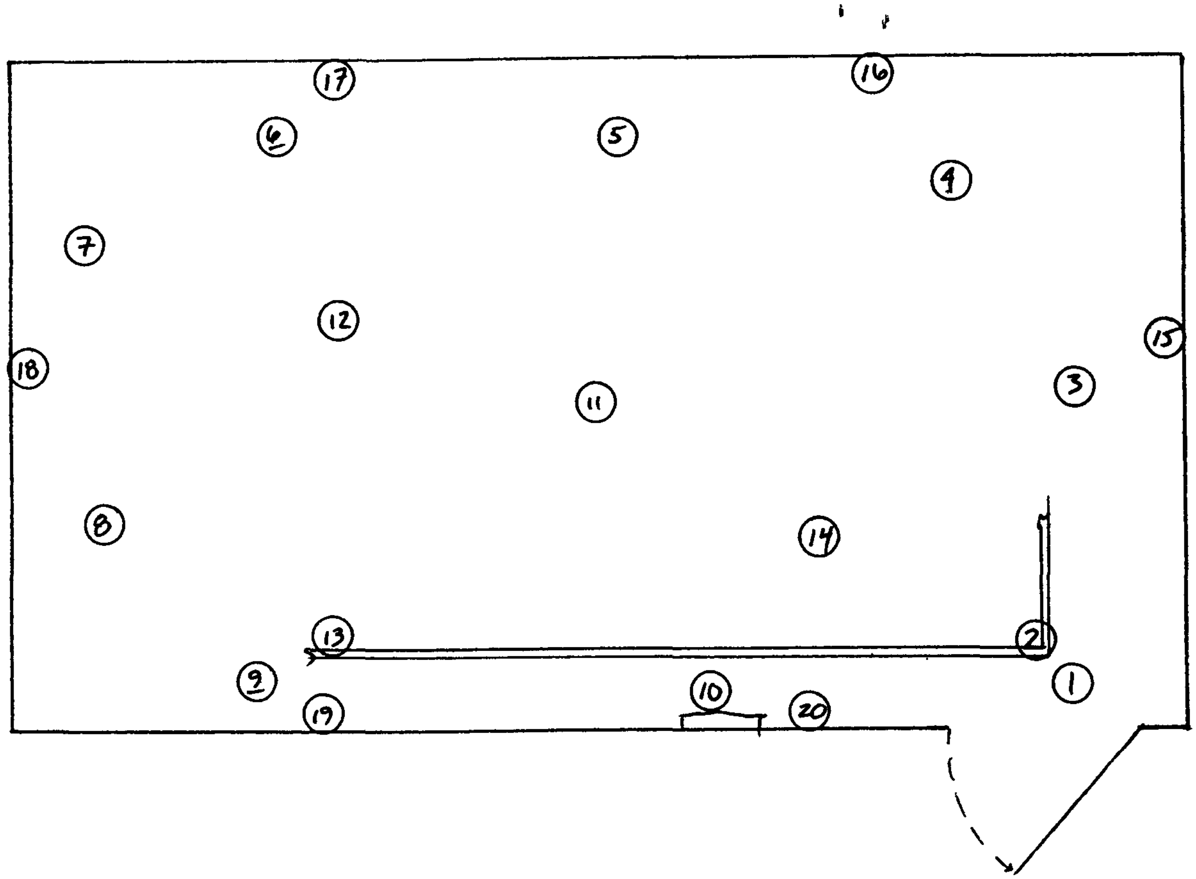
SURVEY RESULTS

SWIPE	LOCATION	ALPHA SWIPE	ALPHA DIRECT	ALPHA WIPE	BETA SWIPE	BETA DIRECT	BETA WIPE
#	Denoted on survey map	DPM/100CM2	DPM/100CM2	DPM/WIPE	DPM/100CM2	DPM/100CM2	DPM/WIPE
1	Floor	<18	546	N/A	<205	1109	N/A
2	Piping	<18	2742	N/A	<205	817	N/A
3	Floor	<18	2472	N/A	<205	1483	N/A
4	Floor	<18	1266	N/A	<205	1534	N/A
5	Floor	25	1260	N/A	<205	1969	N/A
6	Floor	<18	2082	N/A	<205	1969	N/A
7	Floor	94	1440	N/A	<205	1264	N/A
8	Floor	45	1458	N/A	<205	1944	N/A
9	Floor	28	1956	N/A	<205	2869	N/A
10	Floor	<18	84	N/A	<205	<447	N/A
11	Floor	38	1542	N/A	<205	1278	N/A
12	Floor	38	4380	N/A	<205	3222	N/A
13	Piping	<18	444	N/A	<205	<447	N/A
14	Floor	88	2220	N/A	<205	2120	N/A
15	Wall	<18	660	N/A	<205	727	N/A
16	Wall	<18	1800	N/A	<205	1559	N/A
17	Wall	[redacted]					

Date Reviewed 9/26/01 RS Supervision [redacted]

Drawing Showing Survey Points

Rm. 15A



ATTACHMENT E-8

B887 Interior Data Summary and Maps

(SURVEY AREA M)

179

RLC Survey Area M

B887 INTERIOR

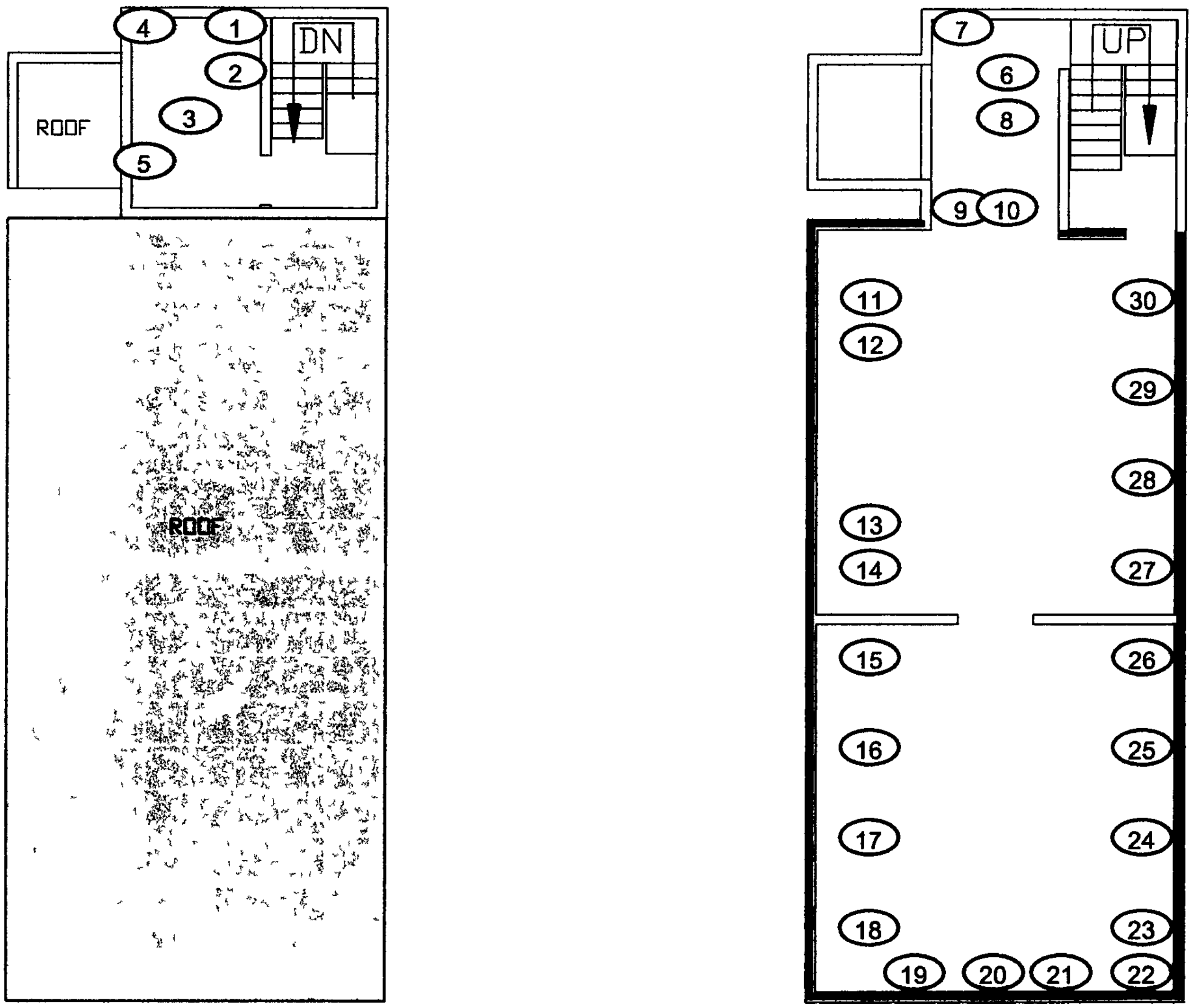
Survey Results

Sample #	Location/Description	Removable		Total	
		Alpha	Beta	Alpha	Beta
1	Floors/Walls < 2 meters	3	0	18	0
2	Floors/Walls < 2 meters	0	36	23	0
3	Floors/Walls < 2 meters	3	40	14	0
4	Floors/Walls < 2 meters	9	16	9	0
5	Floors/Walls < 2 meters	3	0	18	0
6	Floors/Walls < 2 meters	6	0	14	0
7	Floors/Walls < 2 meters	72	0	32	0
8	Floors/Walls < 2 meters	0	12	14	0
9	Floors/Walls < 2 meters	0	28	23	0
10	Floors/Walls < 2 meters	3	8	9	0
11	Floors/Walls < 2 meters	3	32	27	423
12	Floors/Walls < 2 meters	0	0	45	361
13	Floors/Walls < 2 meters	6	0	0	546
14	Floors/Walls < 2 meters	0	0	23	398
15	Floors/Walls < 2 meters	9	0	23	630
16	Floors/Walls < 2 meters	0	28	5	170
17	Floors/Walls < 2 meters	3	8	19	154
18	Floors/Walls < 2 meters	3	12	29	43
19	Floors/Walls < 2 meters	3	0	71	0
20	Floors/Walls < 2 meters	0	0	10	0
21	Floors/Walls < 2 meters	9	0	24	0
22	Floors/Walls < 2 meters	0	36	14	102
23	Floors/Walls < 2 meters	0	0	19	1290
24	Floors/Walls < 2 meters	0	0	5	120
25	Floors/Walls < 2 meters	0	40	5	571
26	Floors/Walls < 2 meters	0	4	10	127
27	Floors/Walls < 2 meters	0	0	33	127
28	Floors/Walls < 2 meters	6	0	10	284
29	Floors/Walls < 2 meters	3	12	24	636
30	Floors/Walls < 2 meters	0	0	14	207
31	Floors/Walls > 2 meters	0	0	9	364
32	Floors/Walls > 2 meters	3	44	14	407
33	Floors/Walls > 2 meters	0	0	27	463
34	Floors/Walls > 2 meters	9	0	59	130
35	Floors/Walls > 2 meters	9	20	55	488
	MIN	0	0	0	0
	MAX	72	44	71	1290
	MEAN	4 7	10 7	21 4	229 7

180

RLC SURVEY FOR BUILDING 887

Survey Area M
Building 887
Survey Unit Description Equipment



UPPER LEVEL

LOWER LEVEL

BLDG 887 FLOOR PLAN

SURVEY MAP LEGEND
- Smear & TSA Location
- Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

FEET 0 30
METERS 0 10
1 inch = 12 feet 1 grid sq = 3 ft. sq.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

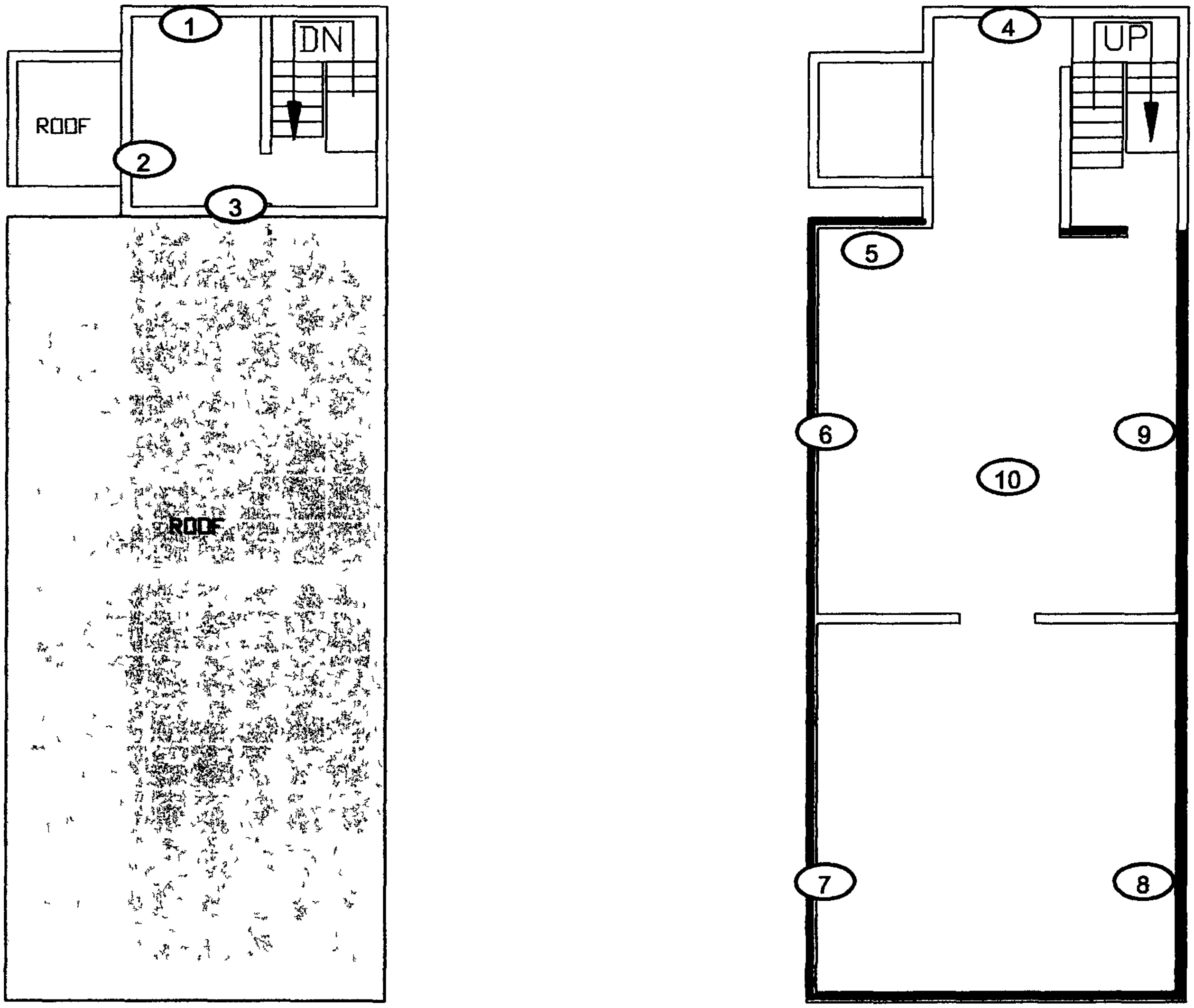
Prepared by: GIS Dept. 303-966-7707
Prepared for:
DynCorp
THE ART OF TECHNOLOGY

MAP ID. fy2002/02-0064/B887 1 October 24, 2001

181

RLC SURVEY FOR BUILDING 887

Survey Area M
Building 887
Survey Unit Description Ceilings and Walls >2meters



UPPER LEVEL

LOWER LEVEL

BLDG 887 FLOOR PLAN

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30

0 METERS 10

1 inch = 12 feet 1 grid sq = 3 ft. sq.

U.S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for

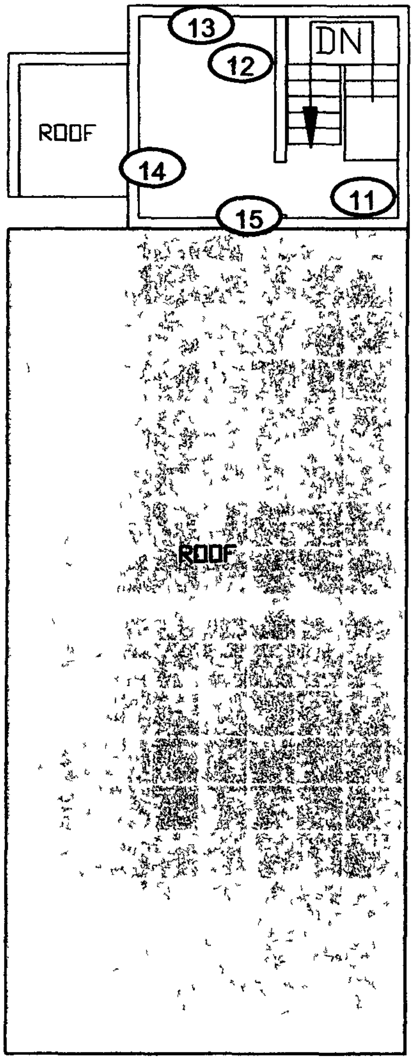
DynCorp
THE ART OF TECHNOLOGY

MAP ID: fy2002/02-0004/B887-2 October 24, 2001

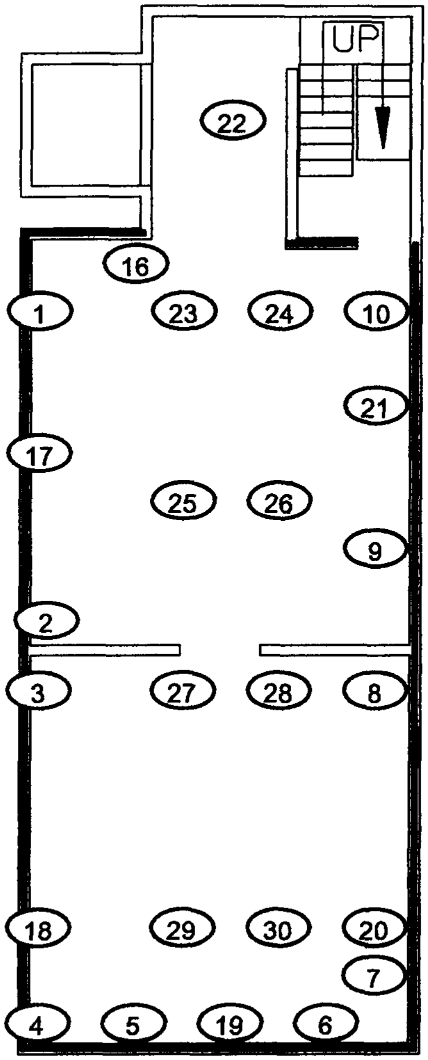
182

RLC SURVEY FOR BUILDING 887

Survey Area M
Building 887
Survey Unit Description Floors & Walls <2 meters



UPPER LEVEL



LOWER LEVEL

BLDG 887 FLOOR PLAN

SURVEY MAP LEGEND
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10

1 inch = 12 feet 1 grid sq = 3 ft. sq

U.S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707
Prepared for

DynCorp
THE ART OF TECHNOLOGY

MAP ID. fy2002/02-0004/B887-3 October 24, 2001

183

ATTACHMENT E-9

B881 Cluster Exterior Data Summaries and Maps

(SURVEY UNITS 881-B-001, 881-B-002, 881-B-003, & 881-B-004)

184

SURVEY UNIT DATA SUMMARY: 881-B-001

Survey Unit Description:

Exterior of 881

185

Survey Unit 881-B-001 Data Summary

Total Surface Activity Measurements

155	155
Number Required	**Number Obtained**

MIN	-4 7	dpm/100 cm^2
MAX *	641.3	dpm/100 cm^2
MEAN	39 6	dpm/100 cm^2
STD DEV	55 4	dpm/100 cm^2
TRANSURANIC DCGL$_W$	**100**	dpm/100 cm^2

Removable Activity Measurements

155	155
Number Required	**Number Obtained**

MIN	-1 2	dpm/100 cm^2
MAX	11 5	dpm/100 cm^2
MEAN	1 4	dpm/100 cm^2
STD DEV	2 5	dpm/100 cm^2
TRANSURANIC DCGL$_W$	**20**	dpm/100 cm^2

* Refer to Notes 1*, 2**, & 3*** on Page 3 of this Data Summary for discussion of elevated readings

180

Survey Unit 881-B-001 Total Surface Activity Results

Manufacturer:	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9	11	12	19	20	21	22	23	24	31	32	33
Serial #:	394	3114	1136	3114	1425	3114	1136	394	1136	1241	1255	1425	1379	1136
Cal Due Date:	11/25/01	11/1/01	1/17/02	11/1/01	1/17/02	11/1/01	1/17/02	11/25/01	1/17/02	2/21/02	2/20/02	1/17/02	11/1/01	1/17/02
Analysis Date:	10/1/01	10/1/01	10/1/01	10/2/01	10/2/01	10/3/01	10/3/01	10/3/01	10/4/01	10/4/01	10/4/01	10/19/01	10/22/01	10/23/01
Alpha Eff (c/d):	0.218	0 22	0.211	0.220	0 215	0.220	0 211	0.218	0.211	0.212	0.219	0.215	0.208	0.211
Alpha Bkgd (cpm)	0 0	2.7	0.7	0.7	0 7	2.7	1.3	0 7	4 0	2.0	1 0	1 3	4 7	2.0
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1 5	1 5	1.5	1.5	1.5	1 5
LAB Time (min)	1.5	1 5	1 5	1.5	1.5	1.5	1 5	1 5	1 5	1.5	1.5	1.5	1 5	1 5
MDC (dpm/100cm²)	9 2	37.5	24.5	23.5	24 1	37.5	30 0	23 8	45.5	34.8	26.5	29.4	49 2	34 9

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
1	20	23.3	6 7	93.0
2	21	13.3	0.7	44 1
3	9	9.3	6.0	26.6
4	23	4 0	1.3	1.5
5	7	8 0	2.7	19.8
6	11	7.3	6.0	16.4
7	9	8.0	4.0	20.5
8	7	14 7	2.7	50.5
9	9	4 0	3 0	1.5
10	11	8 7	3.3	22.8
11	7	11.3	0.7	34 9
12	19	12.7	6.0	41.0
13	12	10 0	6.0	29.4
14	8	12.0	2.7	37.8
15	9	12 0	8 0	39.4
16	9	12.0	3.3	39 4
17	8	13.3	4 7	43 7
18	22	10 7	2.7	33.2
19	20	16.0	4.0	58 4
20	8	12 7	0.7	41.0
21	8	10.0	2.7	28 7
22	22	10.0	2.7	29 9
23	21	18 0	2.7	65 7
24	8	8 0	2.0	19.6
25	22	13.3	4 7	45.6
26	9	12.0	6 0	39 4
27	20	20 7	2.0	80.6
28	11	12 7	6.7	41.0
29	21	18 0	5 0	65 7
30	7	9 3	3.3	25.8
31	20	10 7	2.7	33 2
32	9	10.0	3.3	29.9
33	9	9 3	3.3	26.6
34	8	8.7	2.0	22.8
35	12	9 3	3.3	26 1
36	23	3.3	4.0	1.8
37	9	6.0	4.0	11 0
38	21	16 7	4.0	59 7
39	21	10 7	4.7	32.2
40	20	12.0	3.3	39.4
41	20	10 0	4.7	29.9
42	22	6.7	5.3	14.3
43	20	8 0	4.0	20.5
44	19	10.0	2.7	28 7
45 **	20	36 7	6 0	156.5
46	11	5 3	5.3	7 3
47	23	4.0	1 3	1.5
48	19	11.3	4 7	34.6
49	7	8 7	3.3	23.0
50	22	7.3	5 0	17 1
51	7	8.0	3 3	19.8
52	9	10 0	3 3	29 9
53	21	9.3	3.3	25.8

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
78	20	14.0	4 7	48 9
79	7	5 3	2.7	7 4
80	7	9.3	1.3	25.8
81	8	14.0	2.7	46.9
82	9	10.0	2.7	29.9
83	20	24 7	8 0	99.6
84	9	6.7	3.3	14.3
85 **	20	29.3	4.7	33.8
86	7	10.0	0.7	29.0
87	9	8 3	3.3	21.9
88	21	10.0	6.7	29.0
89	7	4.7	2.7	4.7
90	8	11.3	2.0	34.6
91	11	8.7	4 7	22.8
92	21	14.0	2.7	47.3
93	19	20.0	8 0	74 2
94	11	14 7	4.7	50 1
95	7	8 7	2.7	23.0
96	9	8.0	4 0	20.5
97	9	4 0	4 0	1.5
98	11	22.0	3 3	83.3
99	11	15.3	2.0	52.8
100	7	6.7	2.0	13.8
101	9	12.0	7 3	39 4
102	9	7 6	4.7	18 6
103	11	9.3	7.3	25.5
104	11	18 7	7.3	68.3
105	22	16 7	4.7	61 7
106	11	3.3	4.0	1 7
107	22	2.7	2.7	-4 7
108	20	18.0	4.7	67.8
109	8	8.7	2.0	22.8
110	20	4.0	2.7	1.5
111	9	6.7	5 3	14.3
112	7	7.3	0.7	16.6
113	7	20 7	4.7	78 1
114	7	4.0	1.3	1 4
115	11	23.3	4 7	89 2
116	19	13.3	6.0	43 7
117	8	8 7	3 3	22.8
118	9	6.0	4 0	11.0
119	22	10 7	2.7	33.2
120	21	15.3	4.7	53.3
121	11	15.3	4.7	52.8
122	22	14.0	6.0	48 9
123	11	9 3	3.3	25.5
124	12	6 0	4.7	10.8
125	7	6.7	1 3	13.8
126	8	9.3	4 0	25.5
127	21	10.0	4 7	29 0
128	20	2.7	1.3	-4 7
129	19	12.0	2.0	37 8
130	9	12.0	4.0	39.4

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Survey Unit 881-B-001 Total Surface Activity Results

Manufacturer-	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#-	7	8	9	11	12	19	20	21	22	23	24	31	32	33
Serial #-	394	3114	1136	3114	1425	3114	1136	394	1136	1241	1255	1425	1379	1136
Cal Due Date:	11/25/01	11/1/01	1/17/02	11/1/01	1/17/02	11/1/01	1/17/02	11/25/01	1/17/02	2/21/02	2/20/02	1/17/02	11/1/01	1/17/02
Analysis Date:	10/1/01	10/1/01	10/1/01	10/2/01	10/2/01	10/3/01	10/3/01	10/3/01	10/4/01	10/4/01	10/4/01	10/19/01	10/22/01	10/23/01
Alpha Eff (c/d):	0 218	0 22	0 211	0 220	0 215	0.220	0 211	0 218	0 211	0 212	0.219	0 215	0 208	0 211
Alpha Bkgd (cpm)	0 0	2.7	0.7	0 7	0.7	2.7	1 3	0 7	4 0	2.0	1 0	1 3	4 7	2.0
Sample Time (min)	1 5	1.5	1.5	1 5	1 5	1 5	1 5	1.5	1 5	1.5	1.5	1.5	1 5	1.5
LAB Time (min)	1 5	1.5	1.5	1 5	1.5	1.5	1.5	1 5	1 5	1 5	1.5	1.5	1.5	1.5
MDC ($dpm/100cm^2$)	9 2	37 5	24.5	23.5	24 1	37.5	30 0	23 8	45.5	34 8	26.5	29 4	49 2	34 9

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2
54	7	14 7	2.0	50.5
55	11	20 7	2.7	77.3
56	19	17.3	7 3	61 9
57	7	22 7	1 3	87 2
58	20	10 7	2.7	33 2
59	20	7 3	2.0	17 1
60	9	14.0	3 3	48 9
61	19	8 7	2.7	22.8
62	9	9 0	4 7	25.2
63 **	21	32 0	2.7	99 7
64	20	139 0	4.7	641 3
65	22	4 7	4.7	4.8
66	21	7 3	8.7	16.6
67 **	21	26 7	4.7	67.6
68 ***	21	41.3	3.3	172.5
69	9	10.0	3 3	29 9
70	8	12.7	2.7	41 0
71	22	6 0	6.0	11.0
72	11	13.3	4.0	43 7
73	19	12.7	2.0	41 0
74 *	21	26 7	2.0	71 7
75	8	11.3	3.3	34.6
76	11	14 0	4.0	46 9
77	9	6 0	3.3	11 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2
131	7	18 7	4 0	68.9
132	21	12.0	3.3	38 1
133	22	18 7	4.7	71 2
134	7	12.7	1 3	41 4
135	8	10.0	2.7	28 7
136	9	6.0	4.7	11 0
137	7	6 7	2.0	13.8
138	12	4.0	0.7	1 5
139	11	12.0	4.0	37.8
140	7	9 3	2.7	25.8
141	21	9 3	2.0	25.8
142	19	9 3	2.7	25.5
143	11	4.0	2.0	1 4
144	21	10 7	4.0	32 2
145	9	13.3	4 0	45.6
146	8	10 7	1 3	31 9
147	8	12.0	5.3	37.8
148	22	7 3	3.3	17 1
149	11	12.0	9 3	37 8
150	7	13.3	0 7	44 1
151	8	9.3	2.7	25.5
152	7	6.7	2.7	13 8
153	9	8 7	3 3	23 8
154	21	10.0	2.7	29.0
155	7	18 7	2.7	68 9
			Average LAB	3.7
			MIN	-4.7
			MAX	641 3
			MEAN	39.6
			SD	55.4
			Transuranic DCGL	100

138 QC	24	2.7	3.3	5.9
135 QC	24	7.3	2.0	15 1
10 QC	24	20 7	2.7	76.3
128 QC	24	7.3	1.3	15 1
111 QC	24	6.7	3 3	12.3
105 QC	24	12.7	6.7	39 7
119 QC	24	20.7	6.7	76.3
11 QC	24	12 7	6.0	39 7
			Average LAB	4.0
			MIN	5.9
			MAX	76.3
			MEAN	33.6
			SD	30.3
			Transuranic DCGL	100

* Note 1 Survey point # 64 was taken in a known Fixed Contamination Area located on an interior surface of the southeast dock at B881 This dock is still being used by the facility to ship waste from the building The indicated dock is not considered to be an exterior surface as intended for this survey unit Therefore, the dock will be remediated and re-surveyed during the PDS phase All applicable DCGLs and DQOs were met and no further investigation is required

** Note 2 Due to an initial elevated measurement value at survey locations 63 67 74 and 85 a nine-point mean investigation was performed An additional eight 90-second total surface activity measurements were performed within one square meter of each initial elevated measurement location The one square meter mean of each location was less than 100 dpm/100cm2, with no single total surface activity measurement in excess of 300 dpm/100cm2 The one square meter mean value for each location is reported in the above TSA result table Refer to the investigation table on the attached investigation page for results of the nine point investigations and mean calculations All applicable DCGLs and DQOs were met and no further investigat

*** Note 3 Due to an initial elevated measurement value at survey locations 45 and 68, Radiological Engineering completed an investigation utilizing gamma spectroscopy to identify isotopes of concern The Canberra ISOCS system was utilized to characterize B881 Cluster concrete foundations and corrugated transite roofs with elevated alpha activities Gamma spectroscopy was performed on the concrete foundation located at Stack 2 (Four gamma spec analyses) and the corrugated, transite roof of B887 (one analysis), and analyses results indicated natural uranium as the isotope of concern (No weapons grade Plutonium was present) No single TSA measurement exceeded 5,000 dpm/100 cm^2 (Uranium $DCGL_W$ = 5 000 dpm/100 cm^2 average and 15,000 dpm/100 cm^2, $DCGL_{EMC}$ All applicable DCGL s and DQO s were met and no further investigation is required

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NE Electra	NE Electra
DP 6	DP 6
31	33
1425	1136
1/17/02	1/17/02
10/19/01	10/23/01
0 215	0 211
1 3	2 0
1.5	1.5
1 5	1 5
29 4	34 9

* Due to an initial elevated measurement value at survey locations 63 67 74 and 85 a nine-point mean investigation was performed An additional eight 90-second total surface activity measurements were performed within one square meter of each initial elevated measurement location The one square meter mean of each location was less than 100 dpm/100cm^2 with no single total surface activity measurement in excess of 300 dpm/100cm^2 The one square meter mean value for each location is reported in the TSA result table Refer to the below investigation table for results of the nine point investigation and mean calculation All applicable DCGLs and DQOs were met and no further investigation is required

Nine-Point Mean Investigation For Sample Location 63

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
63	31	32 0	2 7	128.5
63 1	31	18 0	5 3	62 1
63 2	31	24 3	7 3	92 0
63 3	31	24 8	1 3	94 4
63 4	31	22 7	7 3	84 4
63 5	31	30 0	2 0	119 0
63 6	31	30 3	4 7	120 4
63 7	31	31 0	6 7	123 7
63 8	31	20 3	6 7	73 0
			Average LAB	4 9
			MIN	62 1
			MAX	128 5
			MEAN	99 7

Nine-Point Mean Investigation For Sample Location 67

Sample Location Number	Instrument ID#·	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
67	33	26 7	4 7	111 9
67 1	33	18 0	2 7	70 7
67 2	33	20 0	3 3	80 1
67 3	33	11 3	4	38 9
67 4	33	15 3	2.5	57 9
67.5	33	20 8	3 3	83 9
67 6	33	12 0	4 0	42 2
67 7	33	17 3	1.3	67 4
67 8	33	14 7	2 0	55 0
			Average LAB	3 1
			MIN	38 9
			MAX	111 9
			MEAN	67 6

Nine-Point Mean Investigation For Sample Location 74

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
74	31	26 7	2	100 1
74 1	31	18 0	5 3	58 8
74 2	31	24 0	6 7	87 3
74 3	31	13 3	4 7	36.5
74 4	31	23 3	6	83 9
74.5	31	21 3	4 0	74.5
74 6	31	24 0	7 3	87 3
74 7	31	17 9	6 7	58 3
74 8	31	18 0	7 6	58 8
			Average LAB	5 6
			MIN	36.5
			MAX	100 1
			MEAN	71 7

Nine-Point Mean Investigation For Sample Location 85

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
85	31	29 3	4 7	118 9
85 1	31	8 0	2	17 9
85 2	31	4 7	6	2 3
85 3	31	7 3	5 3	14 6
85 4	31	10 7	4	30 7
85.5	31	8 7	2 0	21 2
85 6	31	10 0	4 0	27 4
85 7	31	6 7	4 7	11 7
85 8	31	16 7	5 3	59 1
			Average LAB	4 2
			MIN	2 3
			MAX	118 9
			MEAN	33 8

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Survey Unit 881-B-001 Smear Results

Manufacturer	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4	5	6	13	14	15	16	17	18	25	26	27	28
Serial #	966	770	767	851	966	770	767	851	966	770	767	851	966	770	767	851
Cal Due Date	11/8/01	1/19/02	11/9/01	11/8/01	11/8/01	1/19/02	11/9/01	11/8/01	11/8/01	1/19/02	11/9/01	11/8/01	11/8/01	1/19/02	11/9/01	11/8/01
Analysis Date	10/1/01	10/1/01	10/1/01	10/1/01	10/2/01	10/2/01	10/2/01	10/2/01	10/3/01	10/3/01	10/3/01	10/3/01	10/4/01	10/4/01	10/4/01	10/4/01
Alpha Eff (c/d)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.1	0.2	0.4	0.0	0.0	0.2	0.2	0.1	0.2
Sample Time (min)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
MDC (dpm/100cm²)	8.0	8.0	4.5	8.0	8.0	4.5	8.0	7.0	8.0	9.4	4.5	4.5	8.0	8.0	7.0	8.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100
1	15	4.0	11.5
2	18	2.0	6.1
3	2	0.0	-0.6
4	27	0.0	-0.3
5	2	0.0	-0.6
6	6	1.0	3.0
7	4	2.0	5.5
8	2	0.0	-0.6
9	3	0.0	0.0
10	14	1.0	2.7
11	1	1.0	2.4
12	27	1.0	2.7
13	5	1.0	2.4
14	2	0.0	-0.6
15	3	2.0	6.1
16	3	0.0	0.0
17	3	0.0	0.0
18	28	0.0	-0.6
19	15	2.0	5.5
20	1	0.0	-0.6
21	2	0.0	-0.6
22	25	0.0	-0.6
23	15	2.0	5.5
24	4	0.0	-0.6
25	27	0.0	-0.3
26	2	1.0	2.4
27	17	0.0	0.0
28	5	1.0	2.4
29	15	1.0	2.4
30	4	0.0	-0.6
31	15	0.0	-0.6
32	2	0.0	-0.6
33	2	0.0	-0.6
34	2	0.0	-0.6
35	14	1.0	2.7
36	25	0.0	-0.6
37	4	0.0	-0.6
38	15	1.0	2.4
39	16	0.0	1.2
40	17	1.0	3.0
41	15	1.0	2.4
42	28	0.0	-0.6
43	18	0.0	0.0
44	26	1.0	2.4
45	16	2.0	4.8
46	14	0.0	-0.3
47	28	1.0	2.4
48	28	0.0	-0.6
49	4	0.0	-0.6
50	27	0.0	-0.3
51	1	1.0	2.4
52	1	0.0	-0.6
53	18	0.0	0.0

Sample Location	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100
78	16	0.0	1.2
79	3	0.0	0.0
80	2	1.0	2.4
81	4	0.0	-0.6
82	3	0.0	0.0
83	17	2.0	6.1
84	1	0.0	-0.6
85	18	2.0	6.1
86	2	1.0	2.4
87	4	0.0	-0.6
88	16	0.0	1.2
89	1	0.0	-0.6
90	4	1.0	2.4
91	5	1.0	2.4
92	17	0.0	0.0
93	25	1.0	2.4
94	5	2.0	5.5
95	1	0.0	-0.6
96	4	0.0	-0.6
97	1	0.0	-0.6
98	14	1.0	2.7
99	13	1.0	2.4
100	4	0.0	-0.6
101	2	1.0	2.4
102	1	0.0	-0.6
103	14	0.0	-0.3
104	14	2.0	5.8
105	26	2.0	5.5
106	6	2.0	6.1
107	27	1.0	2.7
108	16	1.0	1.8
109	3	0.0	0.0
110	18	2.0	6.1
111	3	1.0	3.0
112	2	1.0	2.4
113	3	0.0	0.0
114	1	0.0	-0.6
115	13	1.0	2.4
116	25	0.0	-0.6
117	2	0.0	-0.6
118	3	0.0	0.0
119	26	0.0	-0.6
120	16	3.0	7.9
121	5	0.0	-0.6
122	27	0.0	-0.3
123	13	1.0	2.4
124	6	0.0	0.0
125	2	1.0	2.4
126	1	0.0	-0.6
127	15	0.0	-0.6
128	17	0.0	0.0
129	26	0.0	-0.6
130	1	0.0	-0.6

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Survey Unit 881-B-001 Smear Results

Manufacturer*	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#*	1	2	3	4	5	6	13	14	15	16	17	18	25	26	27	28
Serial #*	966	770	767	851	966	770	767	851	966	770	767	851	966	770	767	851
Cal Due Date	11/8/01	1/19/02	11/9/01	11/8/01	11/8/01	1/19/02	11/9/01	11/8/01	11/8/01	1/19/02	11/9/01	11/8/01	11/8/01	1/19/02	11/9/01	11/8/01
Analysis Date	10/1/01	10/1/01	10/1/01	10/1/01	10/2/01	10/2/01	10/2/01	10/2/01	10/3/01	10/3/01	10/3/01	10/3/01	10/4/01	10/4/01	10/4/01	10/4/01
Alpha Eff (c/d)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.1	0.2	0.4	0.0	0.0	0.2	0.2	0.1	0.2
Sample Time (min)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
MDC (dpm/100cm²)	8.0	8.0	4.5	8.0	8.0	4.5	8.0	7.0	8.0	9.4	4.5	4.5	8.0	8.0	7.0	8.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100
54	4	0.0	-0.6
55	6	1.0	3.0
56	26	0.0	-0.6
57	1	2.0	5.5
58	15	0.0	-0.6
59	17	1.0	3.0
60	2	0.0	-0.6
61	26	0.0	-0.6
62	3	0.0	0.0
63	18	0.0	0.0
64	16	1.0	1.8
65	25	1.0	2.4
66	17	0.0	0.0
67	17	1.0	3.0
68	18	3.0	9.1
69	2	0.0	-0.6
70	4	0.0	-0.6
71	26	0.0	-0.6
72	13	0.0	-0.6
73	25	0.0	0.6
74	15	0.0	-0.6
75	3	0.0	0.0
76	14	0.0	-0.3
77	1	4.0	11.5

Sample Location	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100
131	4	2.0	5.5
132	17	1.0	3.0
133	28	0.0	-0.6
134	3	0.0	0.0
135	3	0.0	0.0
136	3	1.0	3.0
137	3	1.0	3.0
138	13	0.0	-0.6
139	13	1.0	2.4
140	4	2.0	5.5
141	18	0.0	0.0
142	28	0.0	-0.6
143	5	0.0	-0.6
144	15	1.0	2.4
145	4	0.0	-0.6
146	1	1.0	2.4
147	3	0.0	0.0
148	25	1.0	2.4
149	13	1.0	2.4
150	1	0.0	-0.6
151	1	0.0	-0.6
152	1	0.0	-0.6
153	4	0.0	-0.6
154	17	1.0	3.0
155	4	2.0	5.5
		MIN	1.2
		MAX	11.5
		MEAN	1.4
		SD	2.5
		Transuranic $DCGL_W$	20

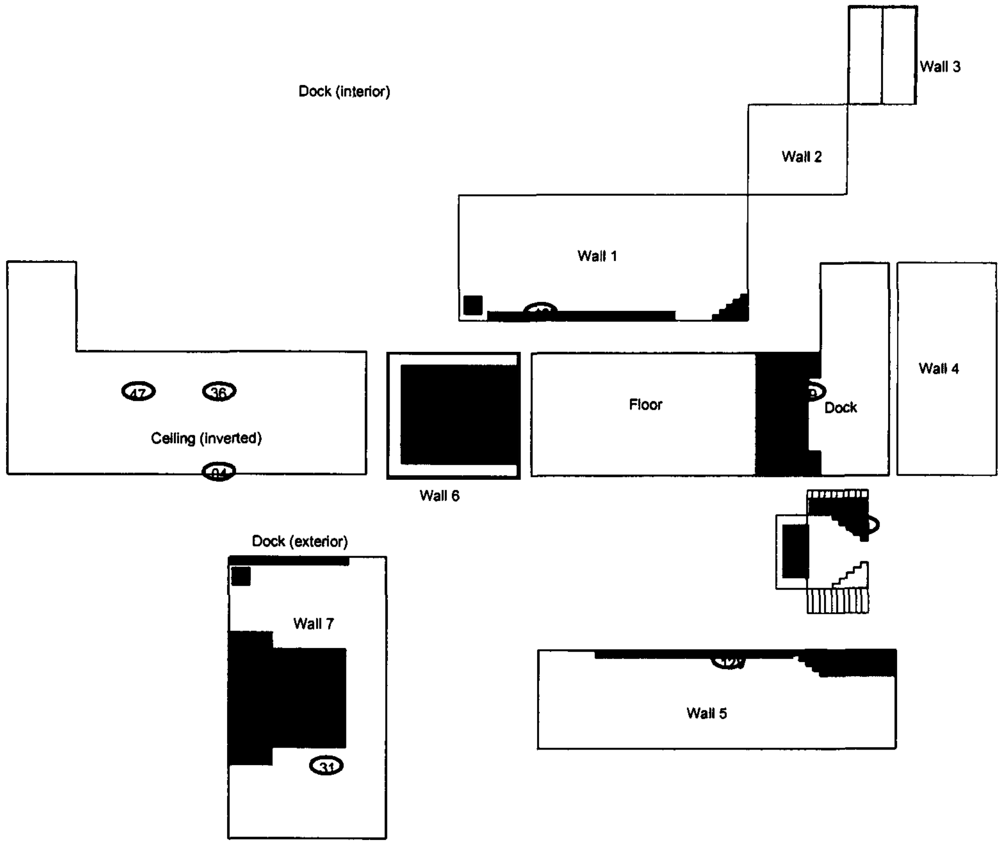
192

RADIOLOGICAL CLOSEOUT SURVEY FOR

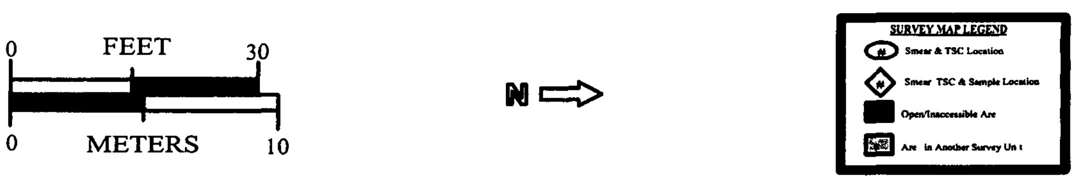
Survey Area B **Survey Unit 881-B-001** **Classification 3**
Building 881
Survey Unit Description East Exterior Walls (north dock)

Total Floor Area NA **Total Area 10315 sq m** **Grid Size N/A**

SURVEY UNIT - MAP 1 OF 11



Scan Areas



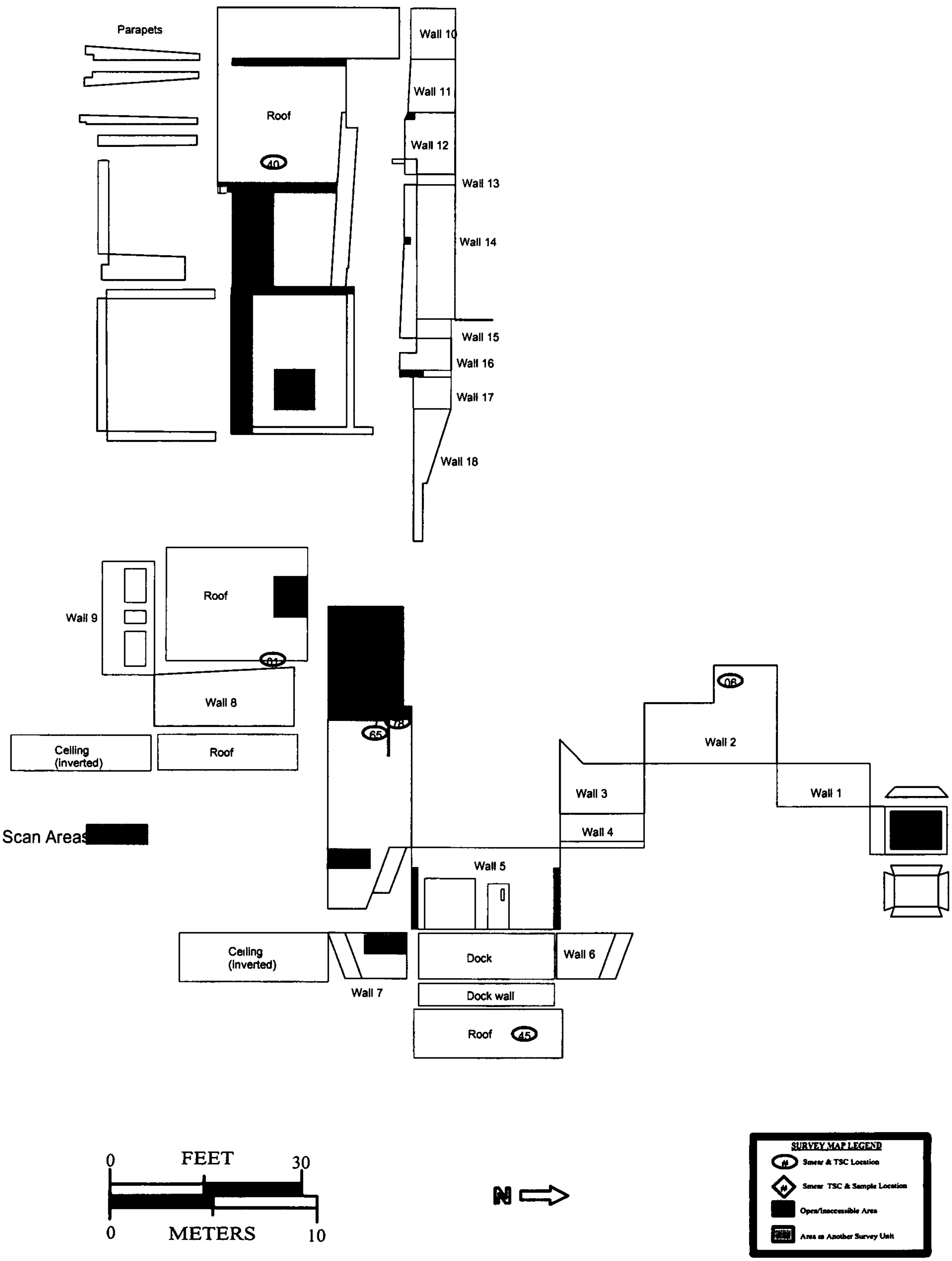
193

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B | Survey Unit 881 B 001 | Classification 3
Building 881
Survey Unit Description East Dock/Roof

Total Floor Area NA | Total Area 10315 sq m | Grid Size N/A

SURVEY UNIT - MAP 2 OF 11



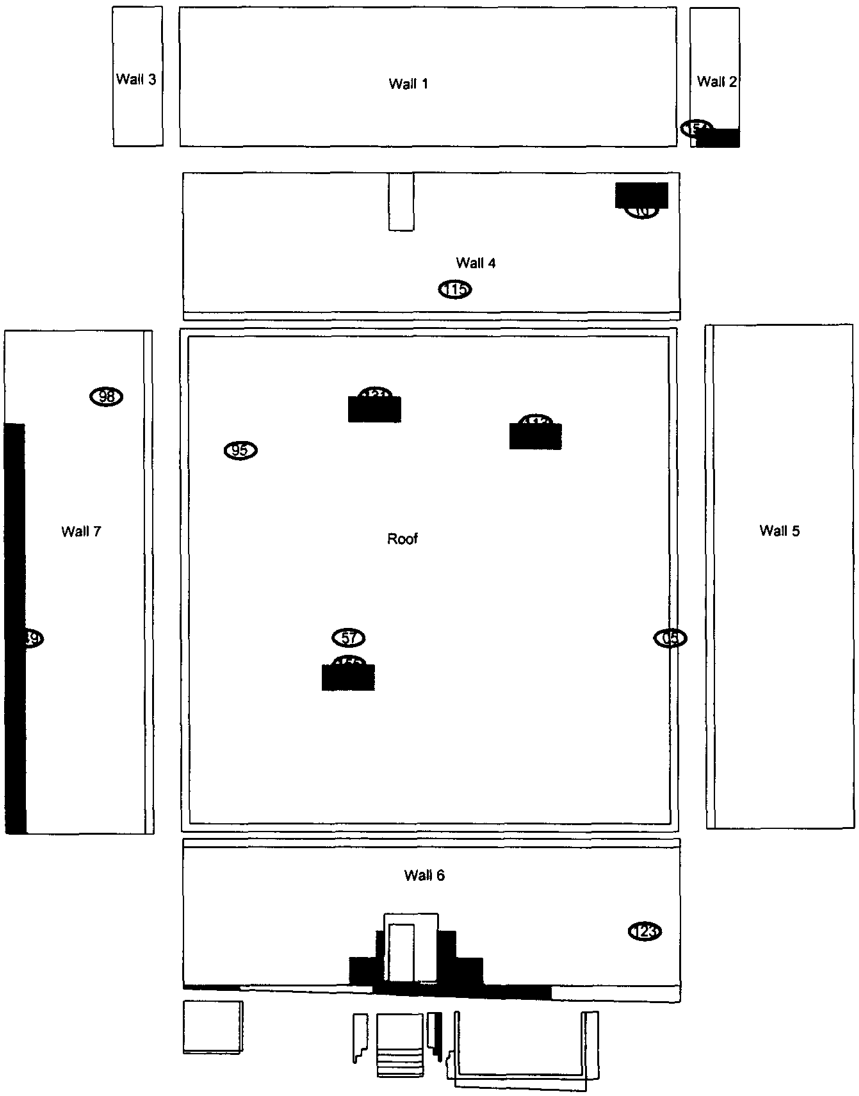
194

RADIOLOGICAL CLOSEOUT SURVEY FOR

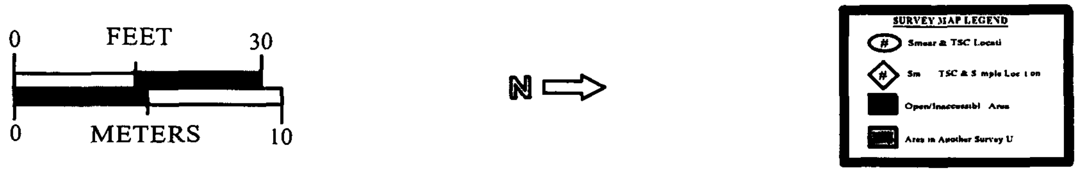
Survey Area B | Survey Unit 881-B-001 | Classification 3
Building 881
Survey Unit Description North Building

Total Floor Area NA | Total Area 10315 sq m | Grid Size N/A

SURVEY UNIT - MAP 3 OF 11



Scan Areas



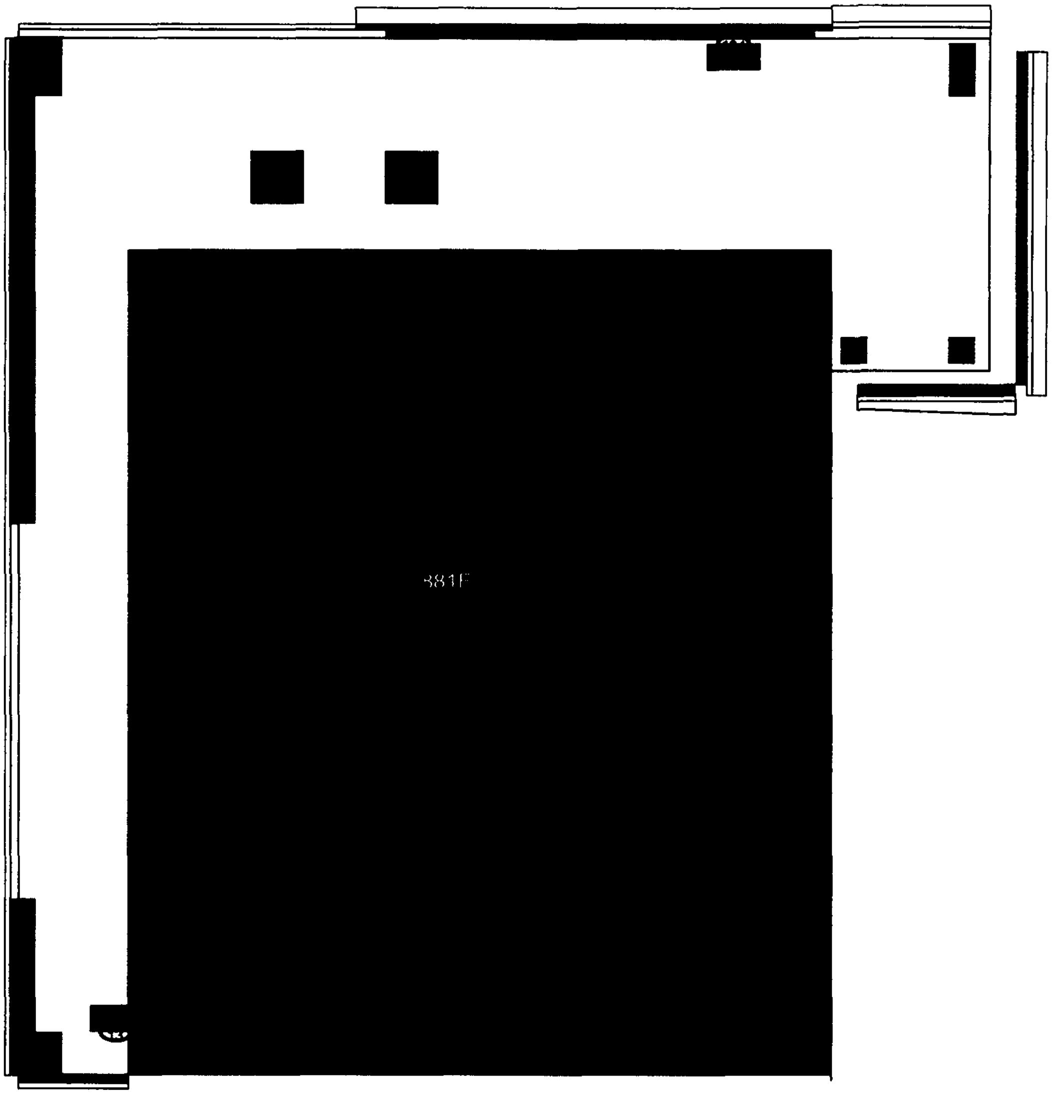
195

RADIOLOGICAL CLOSEOUT SURVEY FOR

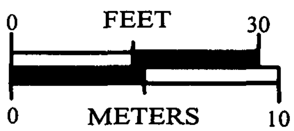
Survey Area B | Survey Unit 881-B-001 | Classification 3
Building 881
Survey Unit Description Roof (NE Quad)

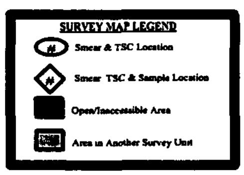
Total Floor Area NA | Total Area 10315 sq m | Grid Size N/A

SURVEY UNIT - MAP 4 OF 11



Scan Area





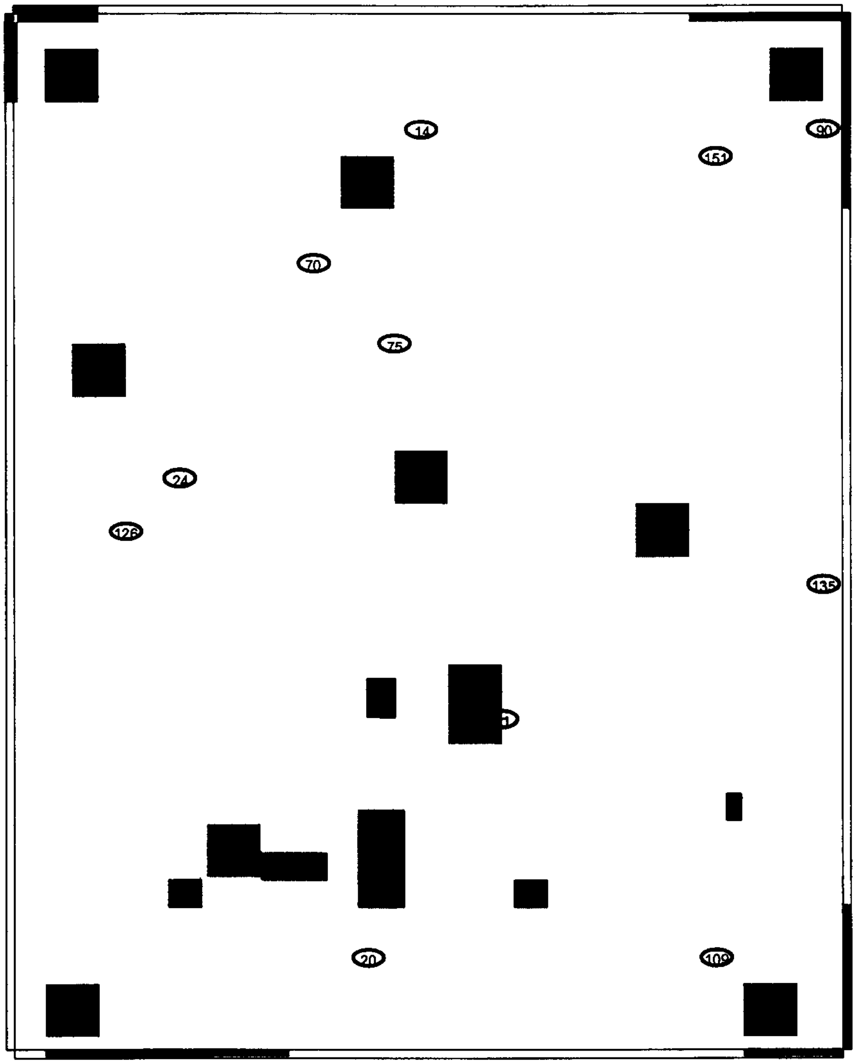
196

RADIOLOGICAL CLOSEOUT SURVEY FOR

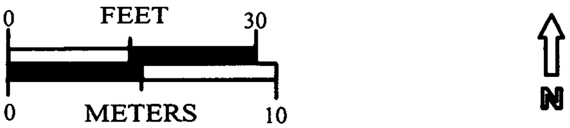
Survey Area B | Survey Unit 881-B-001 | Classification 3
Building 881
Survey Unit Description Roof (NW Quad)

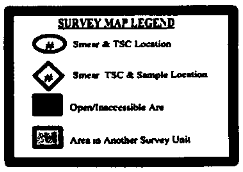
Total Floor Area NA | Total Area 10315 sq m | Grid Size N/A

SURVEY UNIT - MAP 5 OF 11



Scan Areas





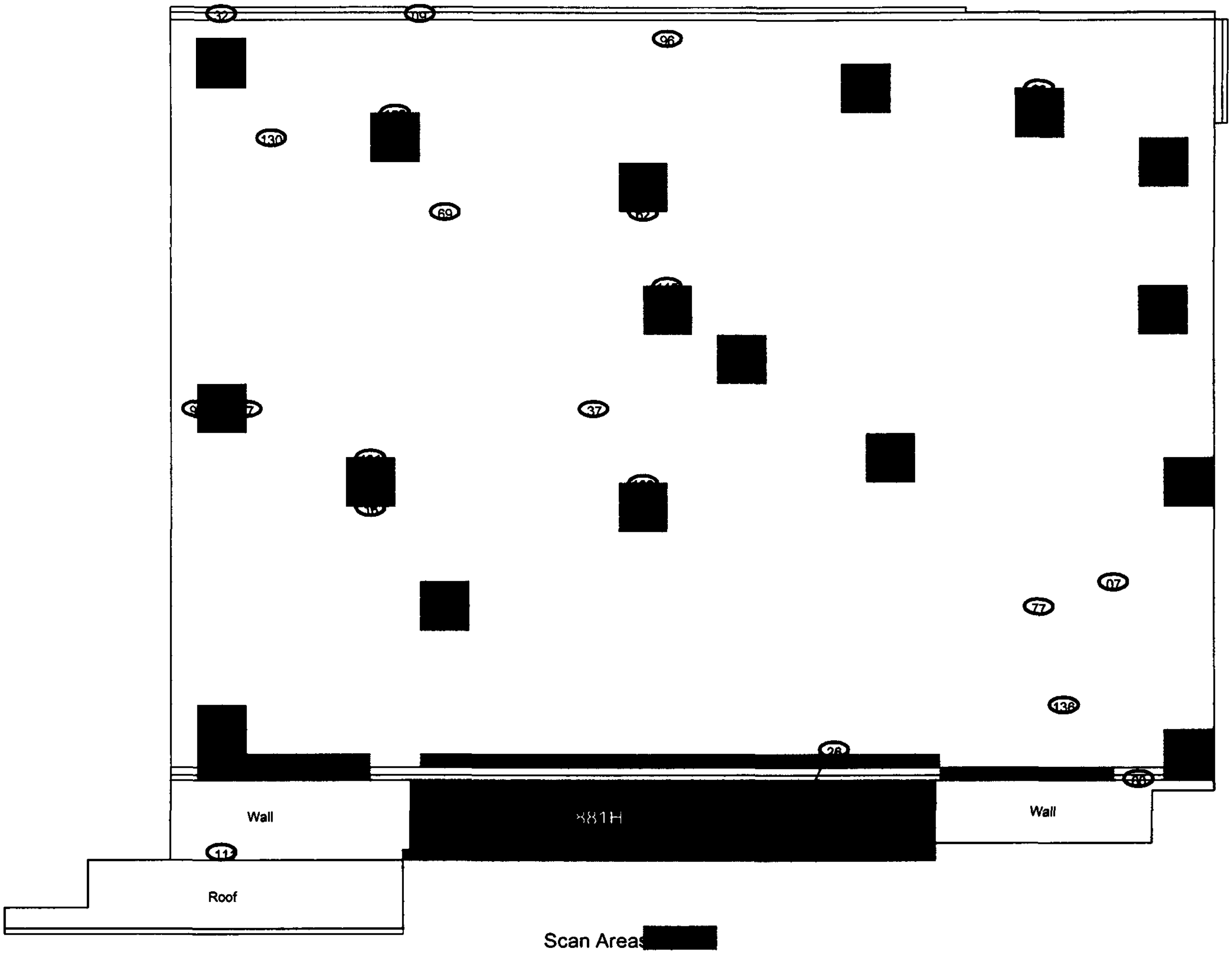
197

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B **Survey Unit** 881-B-001 **Classification** 3
Building 881
Survey Unit Description Roof (SE Quad)

Total Floor Area NA **Total Area** 10315 sq m **Grid Size** N/A

SURVEY UNIT - MAP 6 OF 11



Scan Areas

0 FEET 30
0 METERS 10

N ⇨

SURVEY MAP LEGEND
- Smear & TSC Location
- Smear TSC & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

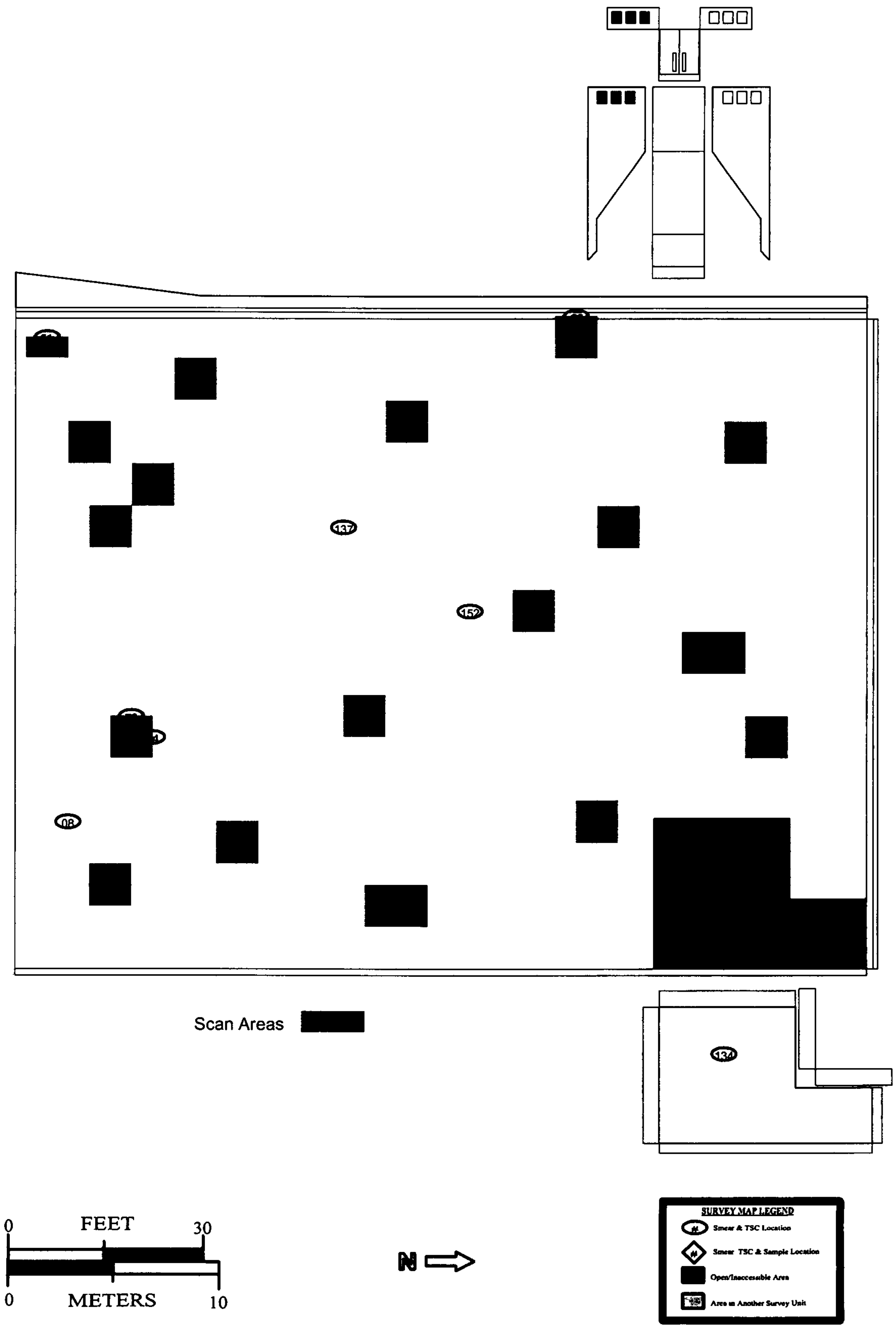
198

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B **Survey Unit** 881-B-001 **Classification** 3
Building 881
Survey Unit Description Exterior Roof (SW Quad)

Total Floor Area NA **Total Area** 10315 sq m **Grid Size** N/A

SURVEY UNIT - MAP 7 OF 11



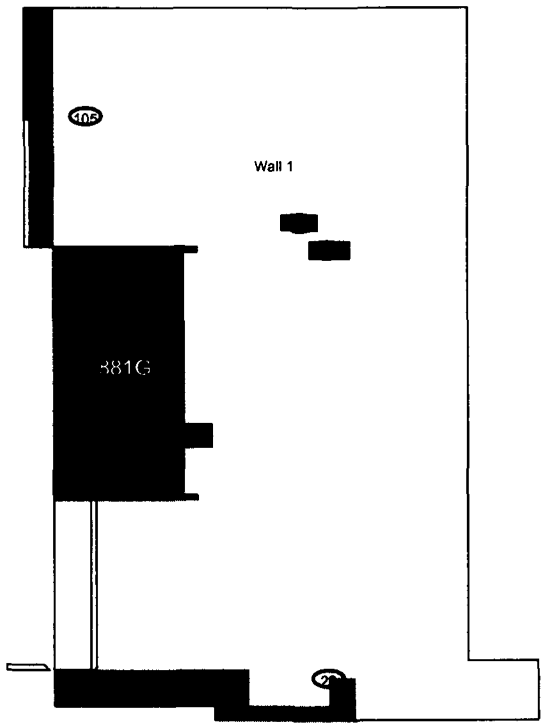
199

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B **Survey Unit** 881-B-001 **Classification** 3
Building 881
Survey Unit Description South Walls (east end)

Total Floor Area NA **Total Area** 10315 sq m **Grid Size** N/A

SURVEY UNIT - MAP 8 OF 11



Scan Area

N

SURVEY MAP LEGEND
Smear & TSC Location
Smear TSC & Sample Location
Open/Inaccessible Area
Area in Another Survey Unit

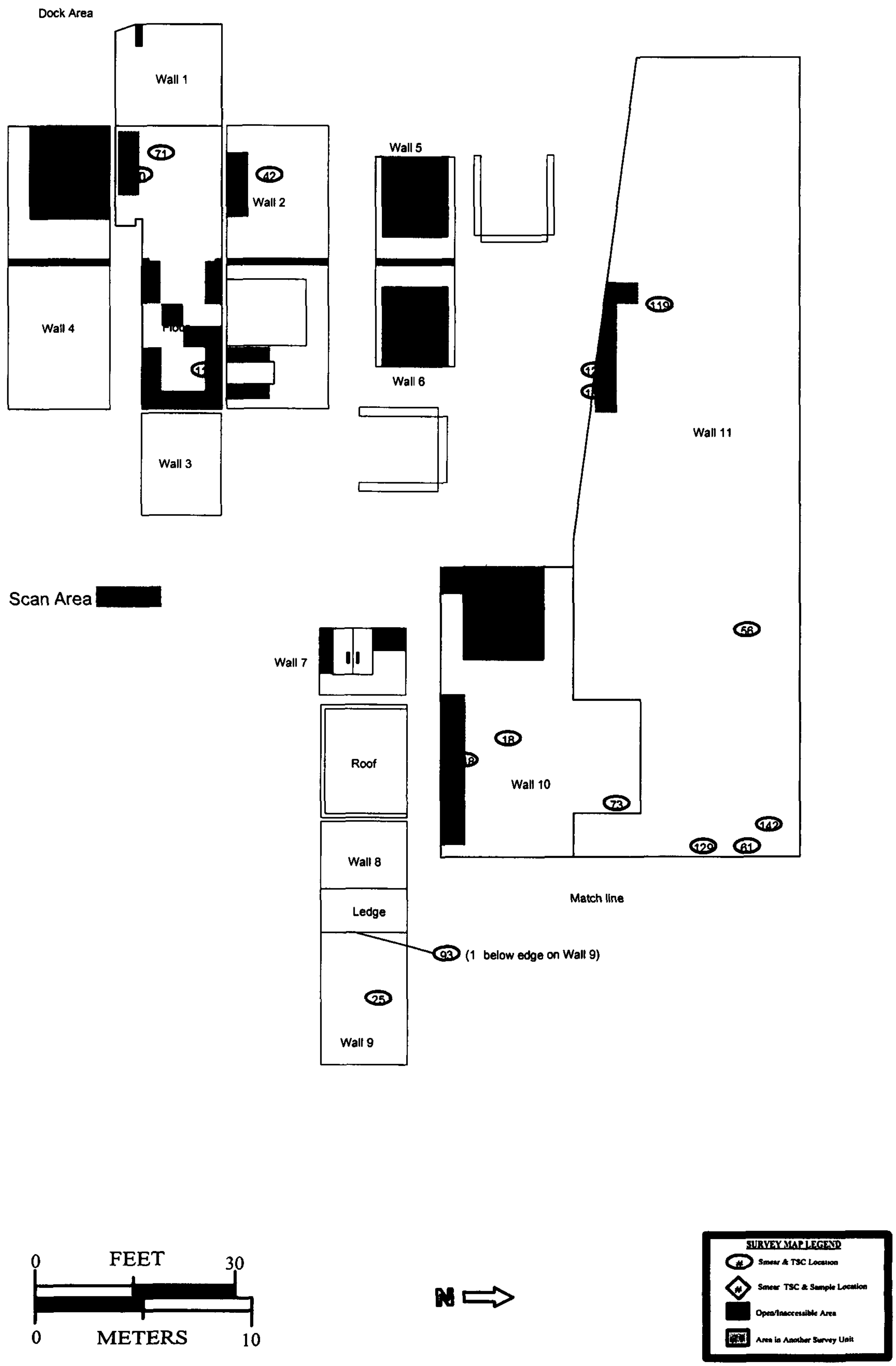
200

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B Survey Unit 881-B-001 Classification 3
Building 881
Survey Unit Description South Exterior Walls

Total Floor Area NA Total Area 10315 sq m Grid Size N/A

SURVEY UNIT - MAP 9 OF 11



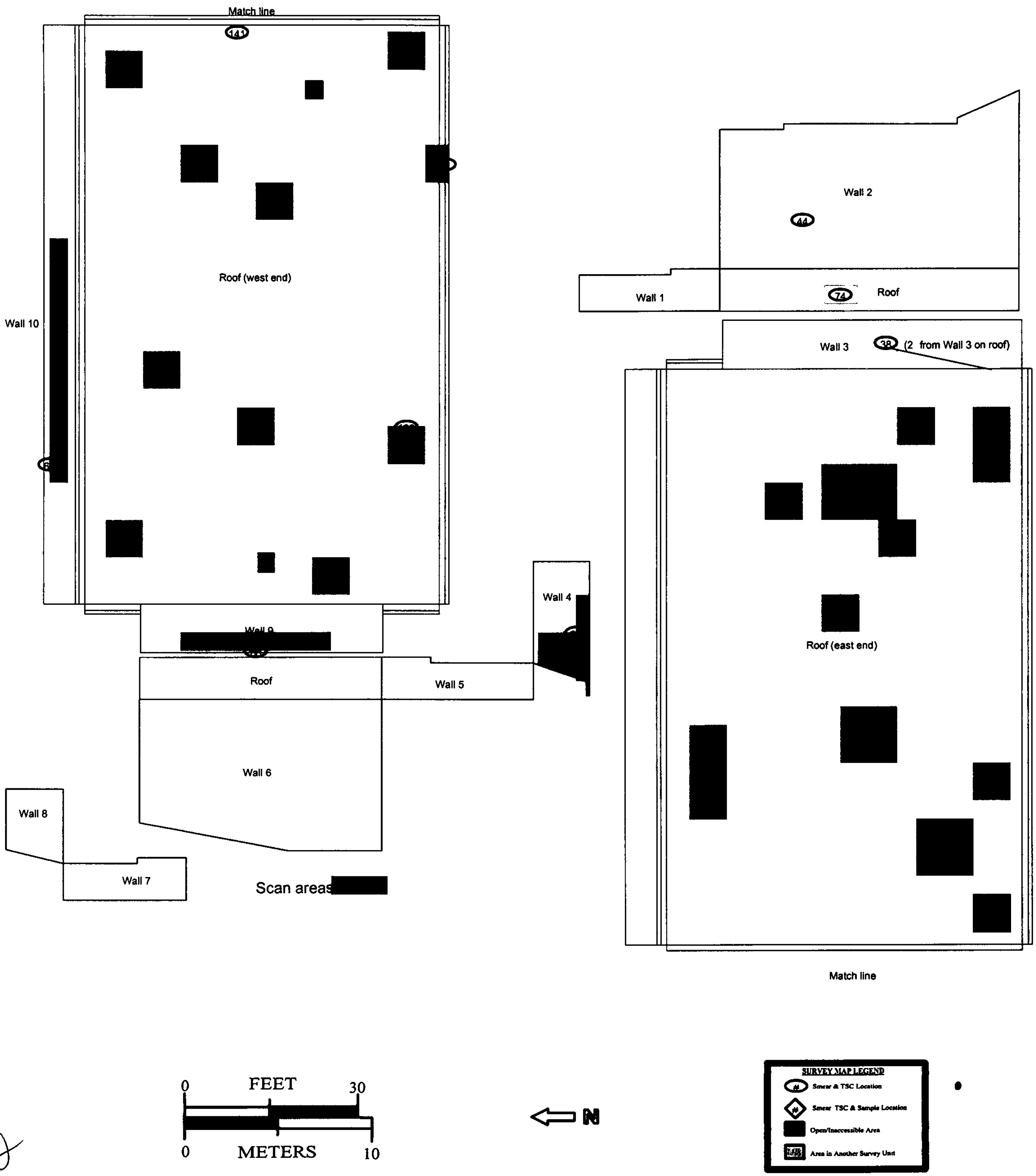
201

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B **Survey Unit** 881-B-001 **Classification** 3
Building 881
Survey Unit Description Exterior South Roof and Walls

Total Floor Area NA **Total Area** 10315 sq m **Grid Size** N/A

SURVEY UNIT - MAP 10 OF 11



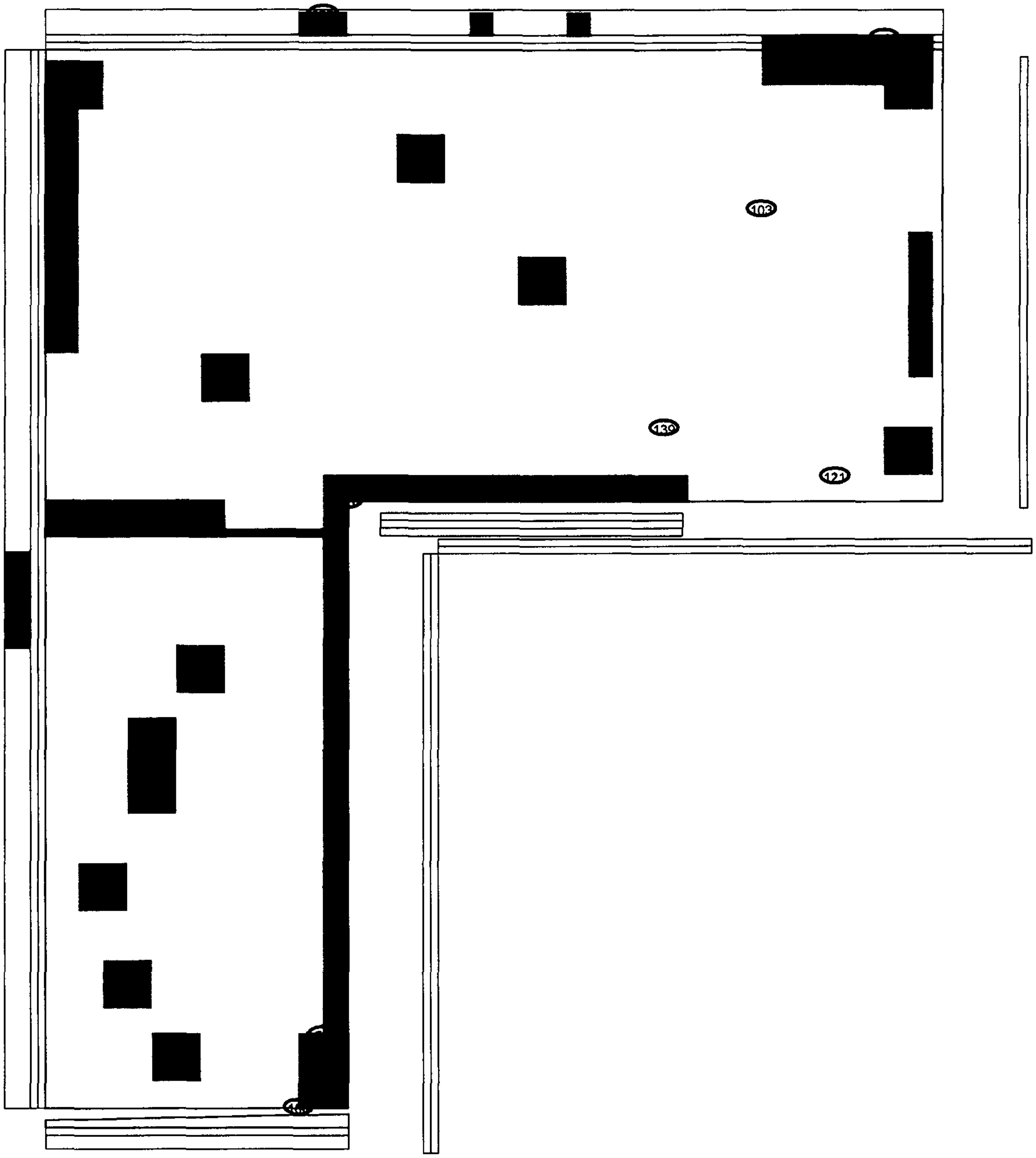
202

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B   Survey Unit 881-B-001   Classification 3
Building 881
Survey Unit Description Roof (NW Corner)

Total Floor Area NA   Total Area 10315 sq m   Grid Size N/A

SURVEY UNIT - MAP 11 OF 11



0 FEET 30
0 METERS 10

N

SURVEY MAP LEGEND
- Smear & TSC Location
- Smear TSC & Sample Location
- Open/Inaccessible Are
- Area in Another Survey Unit

203

SURVEY UNIT DATA SUMMARY: 881-B-002

Survey Unit Description:

Exterior of 881F

204

Survey Unit 881-B-002 Data Summary

Total Surface Activity Measurements

Number Required	Number Obtained
35	35

MIN	-8 7	dpm/100 cm^2
MAX	94 4	dpm/100 cm^2
MEAN	35 6	dpm/100 cm^2
STD DEV	26 5	dpm/100 cm^2
TRANSURANIC DCGL$_W$	100	dpm/100 cm^2

Removable Activity Measurements

Number Required	Number Obtained
35	35

MIN	-0 9	dpm/100 cm^2
MAX	11 8	dpm/100 cm^2
MEAN	1 7	dpm/100 cm^2
STD DEV	3 4	dpm/100 cm^2
TRANSURANIC DCGL$_W$	20	dpm/100 cm^2

205

Survey Unit 881-B-002 Total Surface Activity Results

Manufacturer*	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6
Instrument ID#*	7	8	9
Serial #*	3114	1425	394
Cal Due Date*	11 1/01	1/17/02	11/23/01
Analysis Date*	9/12/01	9/12/01	9/13/01
Alpha Eff (c/d)*	0.220	0.215	0.218
Alpha Bkgd (cpm)	2 0	0 7	0 7
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm^2)	33.5	24 1	23 8

Sample Location Number	Instrument ID#*	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
1	7	10 0	4 7	30 8
2	9	11.3	2 7	37 1
3	9	22 7	2 7	89 4
4	7	3.3	1.3	0 4
5	9	15.3	1.3	55 4
6	9	23 8	2 7	94 4
7	7	12 0	6 0	39 9
8	7	10 0	2 7	30 8
9	7	3.3	4 0	0 4
10	9	15.3	2 0	55 4
11	9	16 7	2 7	61 8
12	7	7 3	4 0	18 5
13	9	15.3	1.3	55 4
14	9	10 7	2 0	34.3
15	9	13.3	1.3	46.2
16	9	16 0	2 0	58 6
17	9	18 7	3.3	71 0
18	7	8 0	5 3	21 7
19	7	4 7	3.3	6 7
20	7	10 0	2 7	30 8
21	7	9 3	2 7	27 6
22	9	10 7	3 3	34.3
23	7	4 7	2 0	6 7
24	7	7.3	6 7	18.5
25	7	12 7	4 0	43 1
26	9	20 7	3.3	80.2
27	7	6 7	6 7	15 8
28	9	19.3	2 7	73 8
29	7	12 9	2 7	44 0
30	7	8 7	6 0	24 9
31	7	1.3	3 3	8 7
32	7	2 7	2 7	2 4
33	7	7.3	4 0	18 5
34	7	5.3	3.3	9.5
35	7	8 0	1.3	21 7
			Average LAB	3.2
			MIN	-8 7
			MAX	94 4
			MEAN	35 6
			SD	26 5
			Transuranic DCGL$_W$	100

24 QC	8	5.3	4 7	2 8
30 QC	8	8 7	4 7	18 6
			Average LAB	4 7
			MIN	2 8
			MAX	18 6
			MEAN	10 7
			SD	11.2
			Transuranic DCGL$_W$	100

206

Survey Unit 881-B-002 Smear Results

Manufacturer·	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#·	1	2	3	4
Serial #·	851	767	851	767
Cal Due Date	11/8/01	11/9/01	11/8/01	11/9/01
Analysis Date	9/12/01	9/12/01	9/13/01	9/13/01
Alpha Eff (c/d)	0 33	0 33	0 33	0.33
Alpha Bkgd (cpm)	0 2	0 3	0 1	0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm²)	8 0	8 8	7 0	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm²)
1	1	1 0	2.4
2	4	1 0	3 0
3	4	1 0	3 0
4	2	0 0	-0 9
5	3	1 0	2 7
6	3	3 0	8 8
7	1	0 0	-0 6
8	2	1 0	2 1
9	2	0 0	-0 9
10	3	0 0	-0 3
11	3	4 0	11 8
12	1	2 0	5 5
13	4	0 0	0 0
14	3	2 0	5 8
15	4	0 0	0 0
16	4	3 0	9 1
17	3	2 0	5 8
18	2	1 0	2 1
19	2	0 0	-0 9
20	1	0 0	-0 6
21	1	0 0	-0 6
22	3	2 0	5 8
23	1	0 0	-0 6
24	2	0 0	-0 9
25	2	1 0	2 1
26	4	0 0	0 0
27	1	0 0	-0 6
28	1	1 0	2 4
29	1	0 0	-0 6
30	1	0 0	-0 6
31	2	0 0	-0 9
32	2	0 0	-0 9
33	1	0 0	-0 6
34	1	0 0	-0 6
35	2	0 0	-0 9
		MIN	-0 9
		MAX	11 8
		MEAN	1 7
		SD	3 4
		Transuranic	20

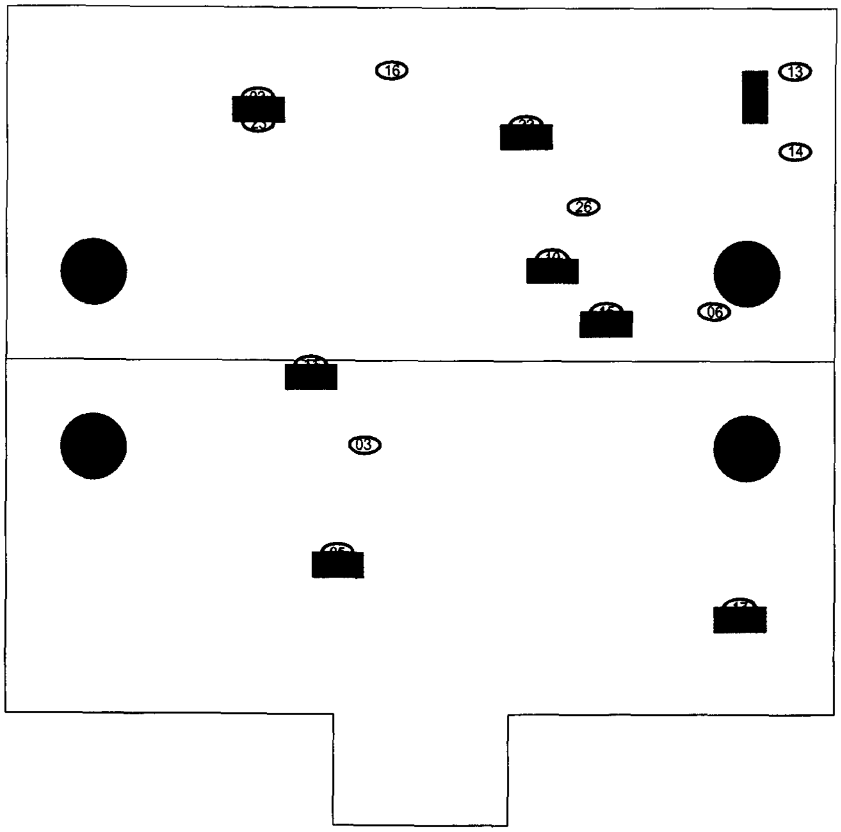
207

RADIOLOGICAL CLOSEOUT SURVEY FOR

Survey Area B
Building 881
Survey Unit 881-B-002
Classification 3
Survey Unit Description 881F Exterior/Roof

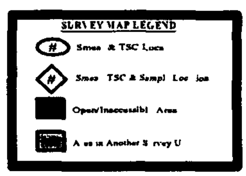
Total Floor Area NA
Total Area 1751 sq m
Grid Size N/A

SURVEY UNIT - MAP 1 OF 2



Scan Areas

N



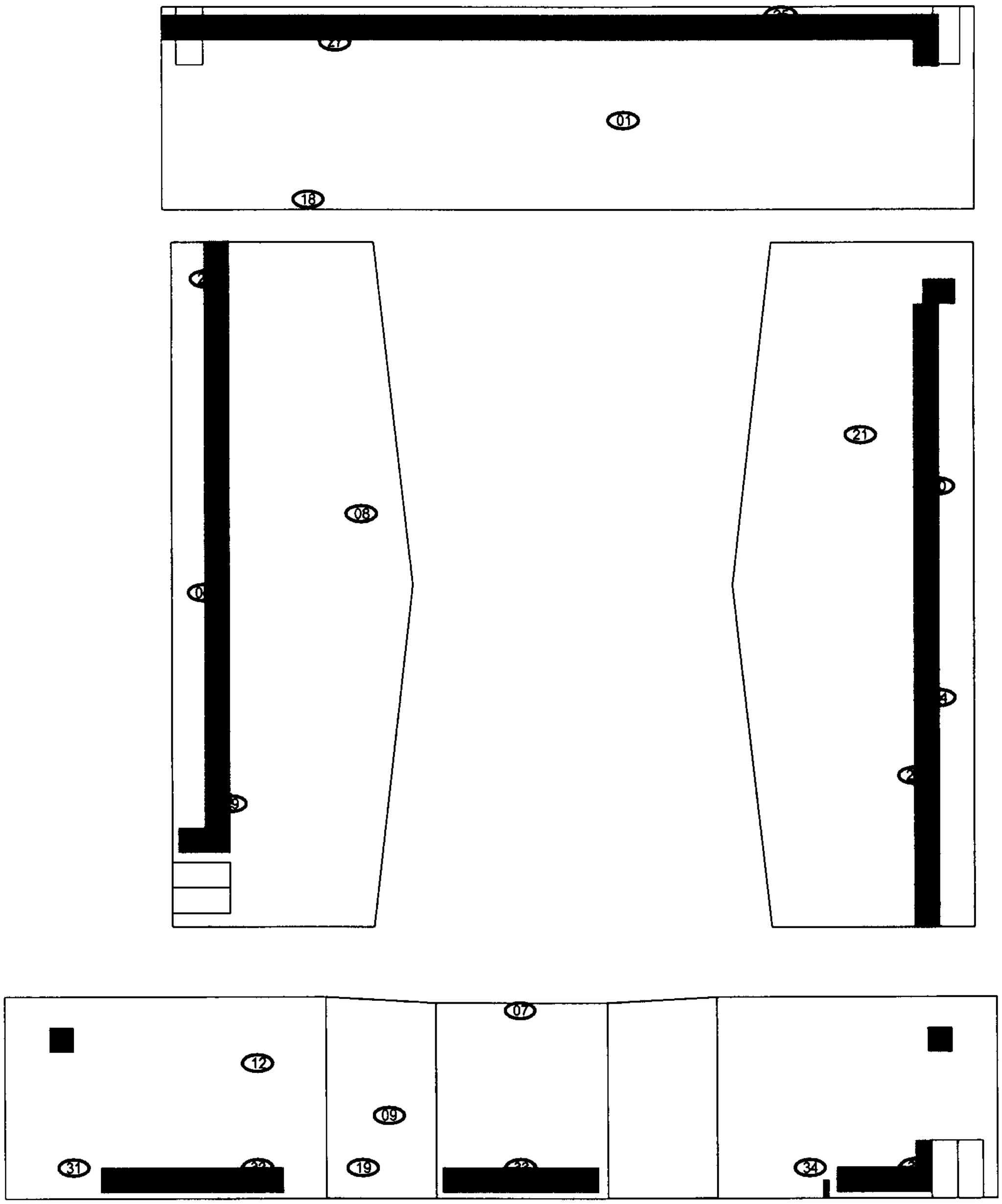
208

RADIOLOGICAL CLOSEOUT SURVEY FOR

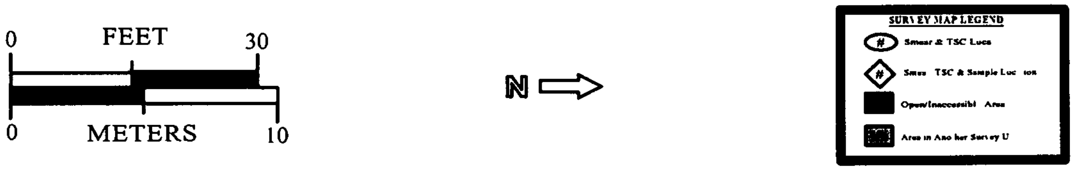
Survey Area B | Survey Unit 881-B-002 | Classification 3
Building 881
Survey Unit Description 881F Exterior

Total Floor Area NA | Total Area 1751 sq m | Grid Size N/A

SURVEY UNIT - MAP 2 OF 2



Scan Areas



209

SURVEY UNIT DATA SUMMARY: 881-B-003

Survey Unit Description:

Exterior of 887

210

Survey Unit 881-B-003 Data Summary

Total Surface Activity Measurements

Number Required	Number Obtained
25	25

MIN	20 0	dpm/100 cm^2
MAX	147 3	dpm/100 cm^2
MEAN	50 2	dpm/100 cm^2
STD DEV	27 3	dpm/100 cm^2
TRANSURANIC $DCGL_W$	100	dpm/100 cm^2

Removable Activity Measurements

Number Required	Number Obtained
25	25

MIN	-0 9	dpm/100 cm^2
MAX	6 1	dpm/100 cm^2
MEAN	1 1	dpm/100 cm^2
STD DEV	2 0	dpm/100 cm^2
TRANSURANIC $DCGL_W$	20	dpm/100 cm^2

* Sample location 16 was located on the corrugated, transite roof of B887 A coupon was taken from this roof and analyzed using gamma spectroscopy Gamma spectroscopy results did not indicate the presence of weapons grade plutonium Therefore, the uranium $DCGL_W$ of 5,000 dpm/100 cm^2 was appropriately applied to this survey location No further investigation required

211

Survey Unit 881-B-003 Total Surface Activity Results

Manufacturer	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#·	7	8	9	10	11
Serial #	3114	394	1425	394	3114
Cal Due Date	11/1/01	11/25/01	1/17/02	11/25/01	11/1/01
Analysis Date	9/18/01	9/18/01	9/19/01	9/21/01	9/27/01
Alpha Eff (c/d)	0 220	0 218	0 215	0 218	0 220
Alpha Bkgd (cpm)	4 7	0 0	0 0	2 0	2 0
Sample Time (min)	1 5	1 5	1 5	1 5	1 5
LAB Time (min)	1 5	1 5	1 5	1 5	1 5
MDC (dpm/100cm^2)	46 5	9 2	9 3	33 8	33 5

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
1	7	13 3	2 0	50 0
2	8	9 3	0 7	32 1
3	7	17 3	2 7	68 2
4	8	8 0	0 7	26 1
5	8	10 0	2 0	35 3
6	7	6 7	2 0	20 0
7	7	18 0	2 7	71 3
8	8	11 3	1 3	41 3
9	8	7 3	4 0	22 9
10	7	10 7	2 0	38 2
11	8	17 3	2 7	68 8
12	8	12 7	1 3	47 7
13	7	9 3	2 7	31 8
14	8	8 0	2 7	26 1
15	8	10 0	0 0	35 3
16 *	7	34 7	0 7	147 3
17	8	18 0	2 0	72 0
18	8	11 3	4 7	41 3
19	8	18 0	3 3	72 0
20	8	18 7	2 7	75 2
21	7	8 7	4 7	29 1
22	8	16 0	4 7	62 8
23	11	15 3	1 3	59 1
24	8	15 3	2 7	59 6
25	11	7 3	1 3	22 7
			Average LAB	2 3
			MIN	20 0
			MAX	147 3
			MEAN	50 2
			SD	27 3
			Transuranic DCGL$_W$	**100**

23 QC	9	19 3	1 7	76 5
25 QC	9	10 7	4 0	36 5
			Average LAB	2 9
			MIN	36 5
			MAX	76 5
			MEAN	56 5
			SD	28 3
			Transuranic DCGL$_W$	**100**

212

Survey Unit 881-B-003 Smear Results

Manufacturer	Eberline	Eberline
Model	SAC-4	SAC-4
Instrument ID#	1	2
Serial #	767	851
Cal Due Date	11/9/01	11/8/01
Analysis Date	9/18/01	9/18/01
Alpha Eff (c/d)	0 33	0 33
Alpha Bkgd (cpm)	0 0	0 3
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	4 5	8 8

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1 0	3 0
2	1	1 0	3 0
3	1	0 0	0 0
4	1	1 0	3 0
5	1	0 0	0 0
6	2	2 0	5 2
7	2	1 0	2 1
8	2	1 0	2 1
9	2	0 0	-0 9
10	1	0 0	0 0
11	2	0 0	-0 9
12	1	1 0	3 0
13	2	0 0	-0 9
14	1	0 0	0 0
15	1	0 0	0 0
16	2	1 0	2 1
17	1	0 0	0 0
18	2	0 0	-0 9
19	1	2 0	6 1
20	2	0 0	-0 9
21	1	0 0	0 0
22	2	1 0	2 1
23	1	0 0	0 0
24	2	0 0	-0 9
25	2	1 0	2 1
		MIN	-0 9
		MAX	6 1
		MEAN	1 1
		SD	2 0
		Transuranic	**20**

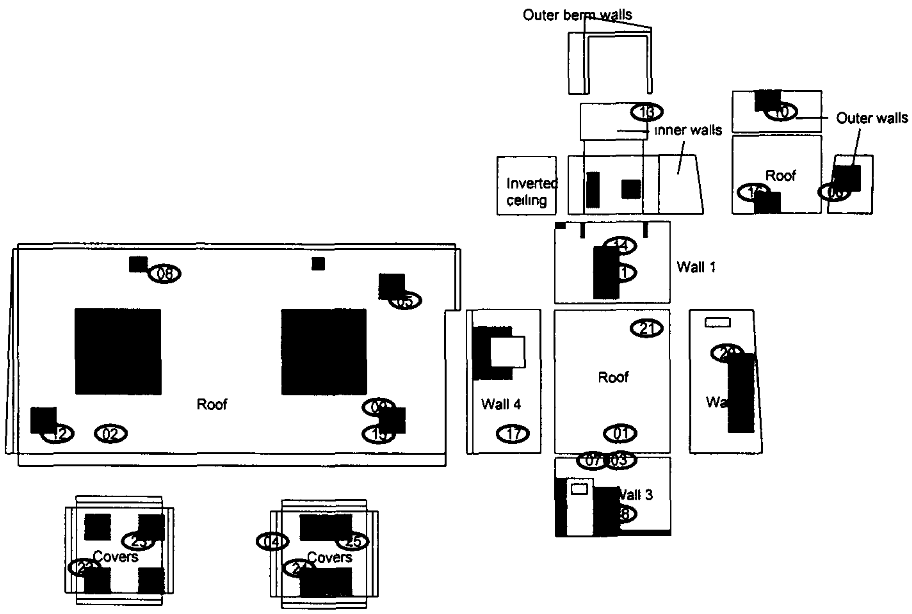
213

RADIOLOGICAL CLOSEOUT SURVEY FOR

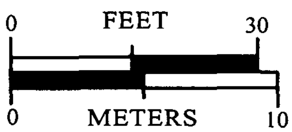
Survey Area B | Survey Unit 881-B-003 | Classification 3
Building 881
Survey Unit Description 887 Exterior

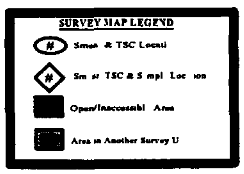
Total Floor Area NA | Total Area 278 sq m | Grid Size N/A

SURVEY UNIT - MAP 1 OF 1



Scan Areas





214

SURVEY UNIT DATA SUMMARY: 881-B-004

Survey Unit Description:

Exterior of Stacks 1, 2, & 3

Survey Unit 881-B-004 Data Summary

Total Surface Activity Measurements

Number Required	Number Obtained
25	25

MIN	-2 0	dpm/100 cm^2
MAX *	160 9	dpm/100 cm^2
MEAN	63 5	dpm/100 cm^2
STD DEV	41 8	dpm/100 cm^2
TRANSURANIC DCGL$_W$	100	dpm/100 cm^2

Removable Activity Measurements

Number Required	Number Obtained
25	25

MIN	-0 6	dpm/100 cm^2
MAX	8 8	dpm/100 cm^2
MEAN	3 5	dpm/100 cm^2
STD DEV	3 4	dpm/100 cm^2
TRANSURANIC DCGL$_W$	20	dpm/100 cm^2

* Survey Points 16, 17, 18, & 19 were taken on a concrete foundation that supports Stack 2 An *in situ* gamma spectroscopy of these points was performed to determine the isoptope of concern for the indicated points The Canberra ISOCS system was utilized in this effort, and all results indicated uranium as the isotope of concern for these locations No Pu contamination was detected Therefore, the uranium limit of 5,000 dpm/100 cm^2 was applied to these points **This survey unit is acceptable for unrestricted release**

216

Survey Unit 881-B-004 Total Surface Activity Results

Manufacturer*	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP-6
Instrument ID#*	7	8	9
Serial #*	3114	1241	1425
Cal Due Date	11/1/01	2/21/02	1/17/02
Analysis Date*	10/3/01	10/4/01	10/4/01
Alpha Eff (c/d)*	0.220	0.213	0.215
Alpha Bkgd (cpm)	2.7	2.0	0.0
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm^2)	37.5	34.6	9.3

Sample Location Number	Instrument ID#*	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm2)
1	7	18.7	5.3	59.0
2	7	24.0	7.3	83.1
3	7	24.7	8.0	86.3
4	7	26.0	9.3	92.2
5	8	5.3	2.0	2.0
6	7	22.0	11.3	74.0
7	7	15.3	5.3	43.5
8	7	16.0	8.7	46.7
9	7	21.3	7.3	70.8
10	7	27.3	7.3	98.1
11	8	6.0	2.0	1.3
12	7	15.3	6.0	43.5
13	8	11.3	2.0	26.2
14	7	17.3	5.3	52.6
15	7	19.3	6.7	61.7
16	8	37.3	3.3	148.3
17	8	20.7	4.7	70.3
18	8	40.0	3.3	160.9
19	8	33.0	2.0	128.1
20	8	12.0	4.0	29.5
21	8	8.0	5.3	10.7
22	8	7.3	5.3	7.4
23	7	22.3	6.0	75.4
24	7	19.1	9.3	60.8
25	7	18.7	6.0	59.0
			Average LAB	5.7
			MIN	2.0
			MAX	160.9
			MEAN	63.5
			SD	41.8
			Transuranic DCGL$_W$	100

13 QC	9	15.3	2.7	54.0
11 QC	9	14.0	4.7	47.9
			Average LAB	3.7
			MIN	47.9
			MAX	54.0
			MEAN	50.9
			SD	4.3
			Transuranic DCGL$_W$	100

* Survey Points 16 17 18 & 19 were taken on a concrete foundation that supports Stack 2. An *in situ* gamma spectroscopy of these points was performed to determine the isoptope of concern for the indicated points The Canberra ISOCS system was utilized in this effort and all results indicated uranium as the isotope of concern for these locations No Pu contamination was detected. Therefore the uranium limit of 5 000 dpm/100 cm^2 was applied to these points **This survey unit is acceptable for unrestricted release**

217

Survey Unit 881-B-004 Smear Results

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	1	2	3	4
Serial #	966	770	767	851
Cal Due Date:	11/8/01	1/19/02	11/9/01	11/8/01
Analysis Date	10/4/01	10/4/01	10/4/01	10/4/01
Alpha Eff. (c/d):	0 33	0 33	0 33	0.33
Alpha Bkgd (cpm)	0 2	0 2	0 1	0.2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	8 0	8 0	7 0	8 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	4	1 0	3 0
2	3	1 0	2 7
3	3	0 0	-0 3
4	1	3 0	8 5
5	3	3 0	8 8
6	4	2 0	6 1
7	1	2 0	5 5
8	3	0 0	-0 3
9	2	0 0	-0 6
10	4	1 0	3 0
11	1	1 0	2 4
12	2	2 0	5 5
13	1	1 0	2 4
14	1	3 0	8 5
15	2	0 0	-0 6
16	2	0 0	-0 6
17	3	0 0	-0 3
18	1	2 0	5 5
19	4	0 0	0 0
20	2	1 0	2 4
21	1	0 0	-0 6
22	4	2 0	6 1
23	2	3 0	8 5
24	3	3 0	8 8
25	4	1 0	3 0
		MIN	-0 6
		MAX	8 8
		MEAN	3 5
		SD	3 4
		Transuranic	20

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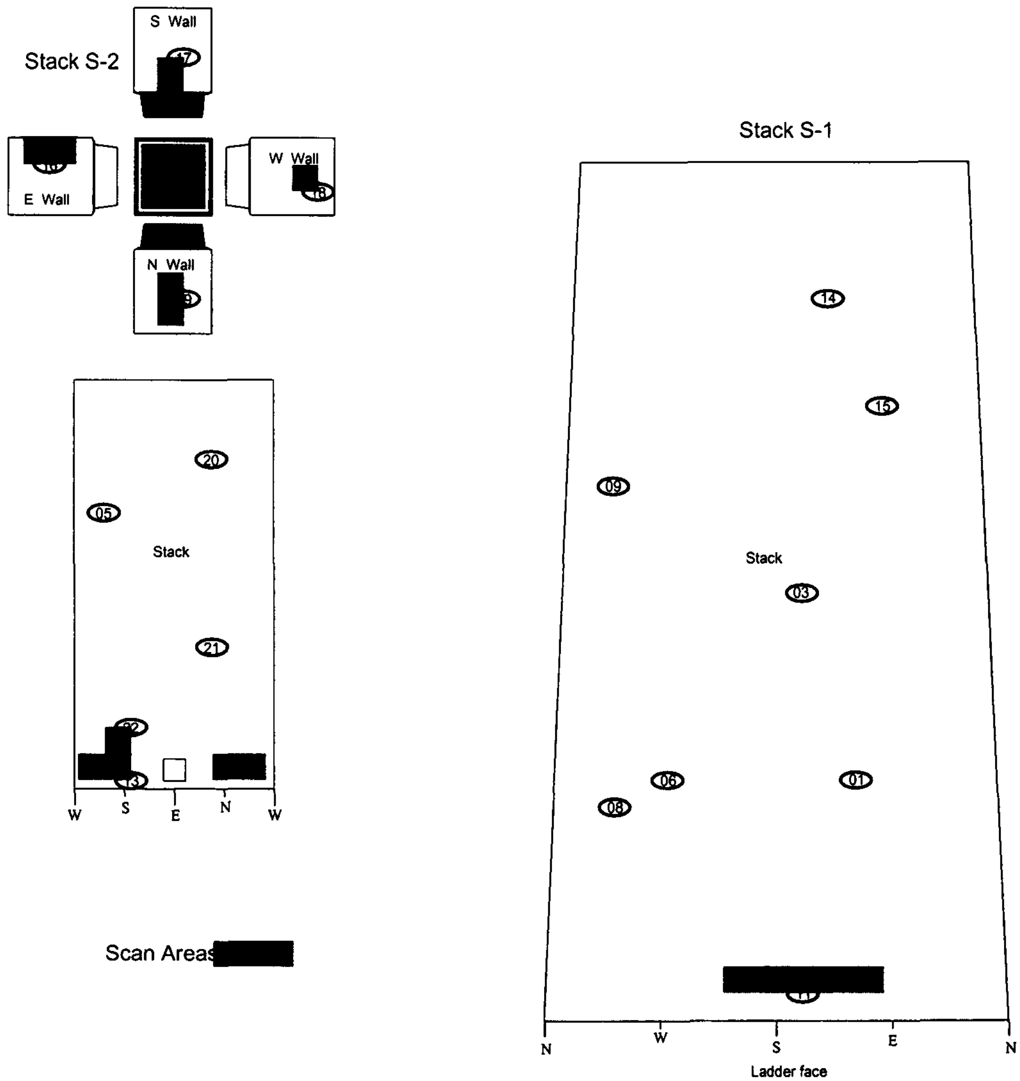
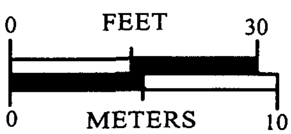
RADIOLOGICAL CLOSEOUT SURVEY FOR

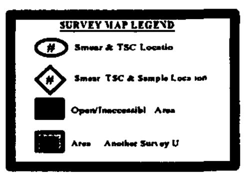
Survey Area B | Survey Unit 881-B-004 | Classification 3
Building 881
Survey Unit Description Stacks (S-1, S-2 S-3) Exteriors

Total Floor Area NA | Total Area 840 sq m | Grid Size N/A

SURVEY UNIT - MAP 1 OF 2







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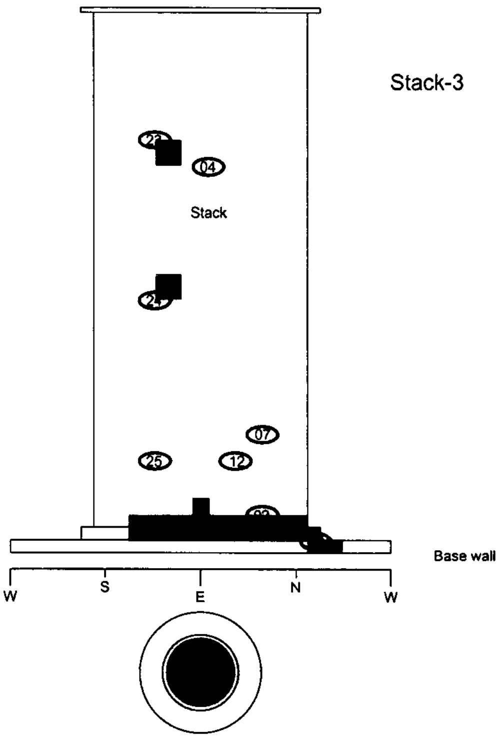
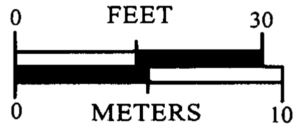
RADIOLOGICAL CLOSEOUT SURVEY FOR

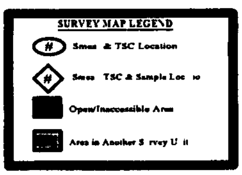
Survey Area B   Survey Unit 881-B-004   Classification 3
Building 881
Survey Unit Description Stacks (S-1, S-2, S-3) Exteriors

Total Floor Area NA   Total Area 840 sq m   Grid Size N/A

SURVEY UNIT - MAP 2 OF 2







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ATTACHMENT E-10

B881 Fixed Contamination Area Log

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B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-1A	272	NW corner	1995			5/1/01	2
881-1B	288	on verticle surface of loading dock (INACCESSIBLE)	1998	1428	432		
881-1C	288	on verticle surface of loading dock	1998			6/13/00	2
881-1D	288	on verticle surface of loading dock	1998			6/13/00	2
881-1E	288	at top of west stairs	1999			6/13/00	2
881-1F	288	on top of loading dock	1999			6/13/00	2
881-1G	288	at the west stairs	1998	570	1087		
881-1H	288	at the west stairs	1998	1308	<378		
881-1I	288	on top of loading dock	1999			6/13/01	2
881-1J	288	on verticle surface of loading dock-(INACCESSIBLE)	1998	2280	N/A		
881-1K	288	at the east stairs	1999	582	<378		
881-1L	288	on verticle surface of loading dock	1998	1362	<378		
881-2		no record found					
881-3		no record found					
881-4		no record found					
881-5		no record found					
881-6		no record found					
881-7		no record found					
881-8		no record found					
881-9		no record found					
881-10	265	on floor - north side	3/17/95	2856	12337		
881-11	249A	on top of metal floor plate, under plastic	3/23/95			12/2/99	2,3
881-12	264A	on baseboard - SW corner	3/17/95	2432	1562		
881-13	233	on baseboard - by door to hall	3/27/95	1308	<378		
881-14	235F	on baseboard - by door to RM 233	3/7/95			12/2/99	2
881-15	233	on duct - north wall-under plastic	4/6/95	27126	3341		
881-16	233	on equipment by north wall	4/5/95			11/27/99	1,2
881-17A	233	at base of column E-9	3/27/92	1308	<378		
881-17B	233	I/S cabinet - below hood (EXCLUSION AREA)	3/27/95	2895	N/A		

Removal codes

1 Item meets the definition for Radioactive Material and not a Fixed Contamination Area.
2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled.

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B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-18A	233	on vent next to hood-under plastic	3/27/95	16830	3535		
881-18B	264	on baseboard - SW corner	3/27/95	2238	<378		
881-19	264	on floor - SE corner	3/17/95	534	<378		
881-20	299	on floor @ door threshold	4/5/95	984	<378		
881-21	299	on floor - NE corner	4/5/95	768	<378		
881-22		no record found					
881-23		no record found					
881-24		no record found					
881-25	245	on floor - SW corner	4/6/95	8946	1876		
881-26		no record found					
881-27		no record found					
881-28		no record found					
881-29	245	on floor - west walkway	4/7/95	3612	1325		
881-30		no record found					
881-31	245	on floor - under mat in main walkway	4/6/95	9654	1447		
881-32	245	on floor-center of room	9/21/00	1032	<378		
881-33							
881-34	245	on floor - SE section, center of room, under mat	4/6/95	8471	<378		
881-35		no record found					
881-36		no record found					
881-37		no record found					
881-38		no record found					
881-39		no record found					
881-40	137A	on floor - SE corner	4/18/95			11/23/99	2
881-41	137A	on floor - SE corner	4/18/95			11/23/99	2
881-42		no record found					
881-43	137A	on floor - middle of N aisle	4/18/95			11/23/99	2,3
881-44	137A	on floor - @ base of cabinet - center of room	4/18/95			11/23/99	2,3
881-45	137A	on floor - SW corner	4/18/95			11/23/99	2,3

Removal codes

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2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled

COPY

B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-46	137	in hood # 107, hydraulic press	4/18/95			11/23/99	1
881-47		no record found					
881-48		no record found					
881-49		no record found					
881-50		no record found					
881-51	137C	step stool	4/18/95			11/23/99	1
881-52	137C	steel plate	4/18/95			11/23/99	1
881-53		no record found					
881-54		no record found					
881-55	131C	on floor - by hood	4/20/95			11/24/99	2
881-56	131C	on floor - behind hood	4/20/95			11/24/99	2
881-57	131C	on floor - SE corner, under plastic	4/20/95			11/24/99	2,CA
881-58	131C	on countertop - in crevasse, under tape	4/20/95			11/24/99	3
881-59A	130	chair	4/20/95			11/23/99	1
881-59B	131	on baseboard, NE corner	4/20/95			11/24/99	2
881-60	131	on floor - diamond plate under desk	4/20/95			11/24/99	2,3
881-61	131	on floor - diamond plate under desk	4/20/95			11/24/99	2,3
881-62	131	spectrometer base	4/20/95			11/24/99	2
881-63	131	spectrometer power & control panel	4/20/95			11/24/99	1
881-64A	131	spectrometer rail	4/20/95			11/24/99	1
881-64B	131	spectrometer chamber	4/20/95			11/24/99	1
881-65	131	on floor - SW corner	4/20/95			11/24/99	2
881-66	131	on floor - SE corner	4/20/95	<58	5967		
881-67	131	table-SE corner	6/14/01	618	<399		
881-68	131A	on floor -by 137A-1	4/20/95	<58	4884		
881-69	127	on baseboard - by RM 127C-1	4/24/95	<58	4443		
881-70	127	on baseboard - by RM 127A	4/24/95			11/24/99	2
881-71	127	on baseboard - E hallway	4/24/95			11/24/99	2
881-72	242	on floor - under west stairs	4/24/95			11/27/99	2

Removal codes

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2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled

COPY

B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-73		no record found					
881-74		no record found					
881-75		no record found					
881-76		no record found					
881-77		no record found					
881-78	116	elevator threshold track	1/28/97			11/24/99	4
881-79		no record found					
881-80	116	on floor - in front of RM 122	4/1/86			6/7/00	2
881-81		no record found					
881-82	121	on floor - in front of "EF-3" panel (UNDER TAPE)	4/25/95	60,000	12,600	6/15/01	2,3
881-83		no record found					
881-84A	236	elevator threshold track	1/28/97			11/27/99	4
881-84B	236	elevator threshold track	1/28/97	1752	<378		
881-85		no record found					
881-86		no record found					
881-87	116	elevator threshold track	1/28/97			6/7/00	2
881-88		no record found					
881-89	114L	baseboard - SE cage	4/27/95	1182	<385		
881-90	114L	base of column B-12	4/27/95			11/26/99	2,CA
881-91	114L	on floor - west end by RM 114H	4/27/95	1710	<385		
881-92	114M	on floor - center of room	4/27/95	1224	<385		
881-93	114L	on floor - 1/2 way down hallway	4/27/95	786	<385		
881-94	114L	base of column C-12	4/27/95	9524	1001		
881-95	114G	on floor - inside gate	4/27/95	882	<385		
881-96	114G	on floor - @ back shelves	4/27/95	3636	443		
881-97	114G	on floor - west end of room	4/27/95	4044	<385		
881-98	114G	on floor - @ back shelves	4/27/95	4590	<385		
881-99	114L	on floor - @ roof drain pipe	4/27/95	10,192	<385		
881-100	114H	on floor - inside gate	4/27/95	2604	<385		

Removal codes

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2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled

COPY

B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-101	114H	on floor - center of room	4/27/95	19,446	3834		
881-102	114H	baseboard - west wall (UNDER TAPE)	4/27/95	38,154	3552	6/11/01	2,3
881-103	114H	on floor - back of cage	4/27/95	26,668	4245		
881-104	114L	on floor - SW cage	4/27/95	520	<385		
881-105	114L	on floor - between cabinets, E-W walkway	4/27/95	5070	735		
881-106	114G	on floor - center of room	4/27/95	540	<385		
881-107	114L	base of column E-12	4/27/95	1300	<385		
881-108	114L	on floor - center of hallway	4/27/95	1035	<385		
881-109	114L	on floor - hallway @ E wall	4/27/95	756	<385		
881-110	114L	on floor - hallway , column E-11	4/27/95	2442	<385		
881-111	114L	on floor - SW corner	4/27/95	708	<385		
881-112	114L	on floor - SW corner	4/27/95	918	<385		
881-113	114L	baseboard at left of elevator	4/27/95	5466	<385		
881-114	114L	baseboard at right of elevator	4/27/95	1014	<385		
881-115	114L	baseboard at right of elevator	4/27/95	2226	<385		
881-116	114L	on floor - SE corner	4/27/95	714	<385		
881-117	114L	on floor - SE corner	4/27/95	5784	<385		
881-118	114L	on floor - SE corner	4/27/95	558	<385		
881-119	114L	on floor-SE corner	4/27/95	804	<385		
881-120	114L	E-W walkway-baseboard-by #105	4/27/95	15,660	1105		
881-121	16	on floor- E end of hallway	6/14/01	6810	1865		
881-122	15	on floor - by batteries	8/11/95	1420	618		
881-123	15	on floor - 1/2 way down hallway	5/1/95	2598	1212		
881-124	15	on floor - 1/4 way down hallway from S end	5/1/95	780	655		
881-125	15	on floor - south end	5/1/95	918	7675		
881-126	12	on floor - middle of hallway	5/1/95	2664	900		
881-127	12	on floor - SW corner	5/1/95	1050	1271		
881-128	12	on duct - SW corner	5/1/95	4284	1393		
881-129	16	on floor - E end of hallway	5/1/95	6558	2358		

Removal codes

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2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled

B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-130	16	on floor - E end of hallway	5/1/95	2430	980		
881-131	16	on floor - E end of hallway	5/1/95	3318	1643		
881-132		no record found					
881-133	242	at base of column B-14	4/18/95	4644	1627		
881-134		no record found					
881-135A	224	on floor @ corner of hood 2N-(LOCATED IN CA)	3/24/95	<56	7204		
881-135B	224	baseboard @ door to hallway	3/22/95			6/13/00	2
881-136		no record found					
881-137		no record found					
881-138	B887,RM2	on floor - behind process waste tank D-184	5/8/95	<58	5387		
881-139	B887,RM1	on floor - behind process waste pump P-1	9/26/96	762	16,873		
881-140		no record found					
881-141		no record found					
881-142		no record found					
881-143		no record found					
881-144	144	on west wall - approx 4' up, RMA side (UNDER TAPE)	5/10/95	1398	<399	6/15/01	2,3
881-145	144	on floor - under plastic, behind Permacon building	5/10/95	<58	12225		
881-146		no record found					
881-147	227	on rubber gasket - hood 480 door frame-(LOCATED IN CA)	5/16/95	510	5879		
881-148	227	on ledge - hood 480-(LOCATED IN CA)	5/16/95	606	817		
881-149		no record found					
881-150	121	in aisle - just past "EF" panels	6/12/95			6/6/00	2
881-151	121	on floor - SE side, at base of pipe support	2/11/93	1200	1152		
881-152		no record found					
881-153		no record found					
881-154		no record found					
881-155	121	on floor - NE corner, under plastic	6/12/95	8766	3252		
881-156		no record found					
881-157		no record found					

Removal codes

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2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled

COPY

B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-158	227	on floor - in front of hood 481	8/13/97			6/11/00	2
881-159	227	on floor - under safety shower	8/13/97			12/2/99	2
881-160	227	on floor - under safety shower	8/13/97			12/2/99	2
881-161	227	on top of hood 481-(LOCATED IN CA)	8/13/97	852	1436		
881-162	227	on glass door of hood 481	8/13/97			12/2/99	2
881-163	227	on glass door of hood 481	8/13/97			12/2/99	2
881-164	227	on door frame of hood 481-(LOCATED IN CA)	8/13/97	26664	3748		
881-165	227	on glass door of hood 481	8/13/97			12/2/99	2
881-166	227	on door frame of hood 481	8/13/97			12/2/99	4
881-167	227	on glass door of hood 481	8/13/97			12/2/99	2
881-168	227	on glass door of hood 481	8/13/97			12/2/99	2
881-169	227	on glass door of hood 481	8/13/97			12/2/99	2
881-170	227	on glass door of hood B1	8/13/97			12/2/99	2
881-171	227	on top of hood B1	8/13/97			12/2/99	2
881-172	227	on glass door of hood B1	8/13/97			12/2/99	2
881-173	227	on glass door of hood B1	8/13/97			12/2/99	2
881-174	227	on glass door of hood B1	8/13/97			12/2/99	2
881-175	227	on glass door of hood B1	8/13/97			12/2/99	2
881-176	227	on glass door of hood B1	8/13/97			12/2/99	2
881-177		no record found					
881-178		no record found					
881-179		no record found					
881-180		no record found					
881-181		no record found					
881-182		no record found					
881-183		no record found					
881-184		no record found					
881-185		no record found					
881-186		no record found					

Removal codes

1 Item meets the definition for Radioactive Material and not a Fixed Contamination Area.
2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled.

B-881 FIXED CONTAMINATION LOG

ID #	ROOM #	SPECIFIC LOCATION	DATE INITIATED	ALPHA DPM/100CM2	BETA DPM/100CM2	DATE REMOVED	REMOVAL CODE
881-187		no record found					
881-188		no record found					
881-189		no record found					
881-190		no record found					
881-191		no record found					
881-192		no record found					
881-193		no record found					
881-194		no record found					
881-195		no record found					
881-196		no record found					
881-197		no record found					
881-198		no record found					
881-199		no record found					
881-200	121	on floor - center of aisle, near NE corner (UNDER TAPE)	11/25/99	24900	7016		
881-201	115	on floor @ north wall	11/25/99			6/6/00	2
881-202	255	on floor - SW corner	11/25/99	204	5004		
881-203	227	on floor - in front of hood 481, near wall-(LOCATED IN CA)	12/2/99	7068	3233		
881-204	312A	on floor - center of room	12/2/99	2130	1588		
881-205	264-A	on metal above baseboard	6/19/00	24924	2110		
881-206	241	E wall SE corner-5' up	9/21/00	1752	<378		
881-207	241	S wall -4' up	9/21/00	966	<378		
881-208	276	on floor at base of column K-12	4/12/01	360	22,254		
881-209							
881-210							
881-211							
881-212							
881-213							
881-214							
881-215							

Removal codes

1 Item meets the definition for Radioactive Material and not a Fixed Contamination Area.
2 Area no longer meets the criteria for a Fixed Contamination Area.
3 Area meets the requirements for a Potential Internal Contamination label and not a Fixed Contamination Area.
4 Fixed Contamination label was redundant in an area already labeled.

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[redacted]

INSTRUMENT DATA

Mfg	EBERLINE	Mfg	NE	Mfg	N/A
Model	SAC-4	Model	ELECTRA	Model	N/A
Serial #	961	Serial #	1390	Serial #	N/A
Cal Due	11/1/01	Cal Due	11/21/01	Cal Due	N/A
Bkg	3 cpm α	Bkg	4 cpm α	Bkg	N/A
Eff	33 00%	Eff	20 7 %	Eff	N/A
MDA	20 dpm α	MDA	58 dpm α	MDA	N/A
Mfg	EBERLINE	Mfg	NE	Mfg	N/A
Model	BC-4	Model	ELECTRA	Model	N/A
Serial #	868	Serial #	1390	Serial #	N/A
Cal Due	7/12/01	Cal Due	11/21/01	Cal Due	N/A
Bkg	40 1 cpm α	Bkg	676 cpm β	Bkg	N/A
Eff	25 00%	Eff	25 00%	Eff	N/A
MDA	200 dpm β	MDA	399 dpm β	MDA	N/A

Survey Type 881-1SA –FIXED CONTAMINATION
Building 881
Location Various
Purpose Semi-annual routine survey

RWP # N/A

Date 6/14/01 Time 13 00

[redacted]

N/A / N/A / N/A
RCT NAME SIGNATURE EMPLOYEE #

PRN/REN # N/A

Comments SEE FCA LOG FOR ADDITIONAL INFORMATION ISOTOPE OF CONCERN IS PU-239 AND DU TAGS THAT WERE REMOVED WERE REPLACED WITH INTERNAL CONTAMINATION TAGS

SURVEY RESULTS

ROOM	LOCATION / DATE		ORIGINAL FIXED ACTIVITY ALPHA	ORIGINAL FIXED ACTIVITY BETA	PRESENT FIXED ACTIVITY ALPHA	PRESENT FIXED ACTIVITY BETA	LOOSE CONTAMINATION ALPHA	LOOSE CONTAMINATION BETA	TAG
#	STICKER ID #	YEAR	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	STATUS
131	881-67	1995	N/A	14,100	618	<399	<20	<200	retagged
131A	881-68	1995	N/A	9400	<58	4884	<20	<200	retagged
127	881-69	1995	UNK	UNK	<58	4443	<20	<200	retagged
121	881-82	1995	1027	N/A	60,000	12,600	[redacted]	<200	[redacted]
16	881-121	1995	UNK	UNK	6810	1865	<20	<200	retagged
15	881-122	1995	2000	N/A	1420	618	<20	<200	retagged
15	881-123	1995	1205	N/A	2598	1212	<20	<200	retagged
15	881-124	1995	1851	N/A	780	655	<20	<200	retagged
15	881-125	1995	692	N/A	918	7675	<20	<200	retagged
12	881-126	1995	189	N/A	2664	900	<20	<200	retagged
12	881-127	1995	955	N/A	1050	1271	<20	<200	retagged
16	881-128	1995	946	N/A	4284	1393	<20	<200	retagged
16	881-129	1995	2200	N/A	6558	2358	<20	<200	retagged
16	881-130	1995	1750	N/A	2430	980	<20	<200	retagged
16	881-131	1995	752	N/A	3318	1643	<20	<200	retagged
144	881-144	1995	740	N/A	1398	<399	[redacted]	<200	[redacted]
144	881-145	1995	N/A	18940	<58	12,225	<20	<200	retagged

Date Reviewed 6/22/01 RS Supervision [redacted]

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[redacted]

RADIOLOGICAL SAFETY

SURVEY RESULTS

COPY

ROOM	LOCATION / DATE		ORIGINAL FIXED ACTIVITY ALPHA	ORIGINAL FIXED ACTIVITY BETA	PRESENT FIXED ACTIVITY ALPHA	PRESENT FIXED ACTIVITY BETA	LOOSE CONTAMINATION ALPHA	LOOSE CONTAMINATION BETA	TAG
#	STICKER ID #	YEAR	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	STATUS
121	881-151	1993	4000	N/A	1200	1152	<20	<200	retagged
121	881-155	1995	4000	N/A	8766	3252	<20	<200	retagged
121	881-200	1999	17580	5767	24900	7016	<20	<200	retagged
887-2	881-138	1995	<20	9400	<58	5387	<20	<200	retagged
887-1	881-139	1996	<18	762	14100	16,873	<20	<200	retagged
131	881-66	1995	UNK	UNK	<58	5967	<20	<200	retagged
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[redacted]

COPY

INSTRUMENT DATA					
Mfg	EBERLINE	Mfg	NE	Mfg	N/A
Model	SAC-4	Model	ELECTRA	Model	N/A
Serial #	961	Serial #	1390	Serial #	N/A
Cal Due	[illegible]/01	Cal Due	11/21/01	Cal Due	N/A
Bkg	1 cpm α	Bkg	4 cpm α	Bkg	N/A
Eff	33.[illegible]%	Eff	20 7 %	Eff	N/A
MDA	20 dpm α	MDA	58 dpm α	MDA	N/A
Mfg	EBERLINE	Mfg	NE	Mfg	N/A
Model	BC-4	Model	ELECTRA	Model	N/A
Serial #	868	Serial #	1390	Serial #	N/A
Cal Due	7/12/01	Cal Due	11/21/01	Cal Due	N/A
Bkg	37 3 cpm α	Bkg	628 cpm β	Bkg	N/A
Eff	25 00%	Eff	25 00%	Eff	N/A
MDA	200 dpm β	MDA	385 dpm β	MDA	N/A

Survey Type 881-1SA –FIXED CONTAMINATION

Building 881

Location Various

Purpose Semi-annual routine survey

RWP # N/A

Date 6/11/01 Time 09 00

[redacted]

N/A	/	N/A	/	N/A
RCT NAME		SIGNATURE		EMPLOYEE #

PRN/REN # N/A

Comments SEE FCA LOG FOR ADDITIONAL INFORMATION ISOTOPE OF CONCERN IS PU-239 AND DU
TAG THAT WAS REMOVED WAS REPLACED WITH AN INTERNAL CONTAMINATION TAG

SURVEY RESULTS

ROOM	LOCATION / DATE		ORIGINAL FIXED ACTIVITY ALPHA	ORIGINAL FIXED ACTIVITY BETA	PRESENT FIXED ACTIVITY ALPHA	PRESENT FIXED ACTIVITY BETA	LOOSE CONTAMINATION ALPHA	LOOSE CONTAMINATION BETA	TAG
#	STICKER ID #	YEAR	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	STATUS
114L	881-89	1995	705	N/A	1182	<385	<20	<200	retagged
114L	881-91	1995	1481	N/A	1760	<385	<20	<200	retagged
114M	881-92	1995	2379	N/A	1224	<385	<20	<200	retagged
114L	881-93	1995	938	N/A	786	<385	<20	<200	retagged
114L	881-94	1995	4426	N/A	9524	1001	<20	<200	retagged
114G	881-95	1995	454	N/A	882	<385	<20	<200	retagged
114G	881-96	1995	469	N/A	3636	443	<20	<200	retagged
114G	881-97	1995	4641	N/A	4044	<385	<20	<200	retagged
114G	881-98	1995	3631	N/A	4590	<385	<20	<200	retagged
114L	881-99	1995	4768	N/A	10,192	<385	<20	<200	retagged
114H	881-100	1995	2070	N/A	2604	<385	<20	<200	retagged
114H	881-101	1995	16,024	N/A	19,446	3834	<20	<200	retagged
114H	881-102	1995	20,435	N/A	38,154	3552	[redacted]	<200	[redacted]
114H	881-103	1995	5659	N/A	26,668	4245	<20	<200	retagged
114L	881-104	1995	474	N/A	520	<385	<20	<200	retagged
114L	881-105	1995	770	N/A	5070	735	<20	<200	retagged
114G	881-106	1995	770	N/A	540	<385	<20	<200	retagged

Date Reviewed 6/22/01 RS Supervision [redacted]

Print Name Signature Emp #

[redacted]

[redacted]

RADIOLOGICAL SAFETY
SURVEY RESULTS

COPY

ROOM #	LOCATION / DATE STICKER ID #	YEAR	ORIGINAL FIXED ACTIVITY ALPHA DPM/100CM2	ORIGINAL FIXED ACTIVITY BETA DPM/100CM2	PRESENT FIXED ACTIVITY ALPHA DPM/100CM2	PRESENT FIXED ACTIVITY BETA DPM/100CM2	LOOSE CONTAMINATION ALPHA DPM/100CM2	LOOSE CONTAMINATION BETA DPM/100CM2	TAG STATUS
114L	881-107	1995	1065	N/A	1300	<385	<20	<200	retagged
114L	881-108	1995	1035	N/A	528	<385	<20	<200	retagged
114L	881-109	1995	2064	N/A	756	<385	<20	<200	retagged
114L	881-110	1995	2463	N/A	2442	<385	<20	<200	retagged
114L	881-111	1995	1076	N/A	708	<385	<20	<200	retagged
114L	881-112	1995	1183	N/A	918	<385	<20	<200	retagged
114L	881-113	1995	5870	N/A	5466	<385	<20	<200	retagged
114L	881-114	1995	830	N/A	1014	<385	<20	<200	retagged
114L	881-115	1995	2090	N/A	2226	<385	<20	<200	retagged
114L	881-116	1995	616	N/A	714	<385	<20	<200	retagged
114L	881-117	1995	1704	N/A	5784	<385	<20	<200	retagged
114L	881-118	1995	616	N/A	558	<385	<20	<200	retagged
114L	881-119	1995	1101	N/A	804	<385	<20	<200	retagged
114L	881-120	1995	16,442	N/A	15,660	1105	<20	<200	retagged
276	881-208	2001	360	22,254	360	22,254	<20	<200	original
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[redacted]

INSTRUMENT DATA

Mfg	EBERLINE	Mfg	NE	Mfg	N/A
Model	SAC-4	Model	ELECTRA	Model	N/A
Serial #	961	Serial #	1390	Serial #	N/A
Cal Due	11/1/01	Cal Due	11/21/01	Cal Due	N/A
Bkg	1	Bkg	4 cpm α	Bkg	N/A
Eff	33 00%	Eff	20 7%	Eff	N/A
MDA	20	MDA	58	MDA	N/A

Survey Type	881-1SA –FIXED CONTAMINATION
Building	881
Location	Various
Purpose	Semi-annual routine survey
RWP #	N/A

Mfg	EBERLINE	Mfg	NE	Mfg	N/A
Model	BC-4	Model	ELECTRA	Model	N/A
Serial #	868	Serial #	1390	Serial #	N/A
Cal Due	7/12/01	Cal Due	11/21/01	Cal Due	N/A
Bkg	39 4	Bkg	605 cpm β	Bkg	N/A
Eff	25 00%	Eff	31 0%	Eff	N/A
MDA	200	MDA	378	MDA	N/A

Date 6/9/01 Time 13 00

[redacted]

PRN/REN # N/A

Comments SEE FIXED CONTAMINATION AREA LOG FOR ADDITIONAL INFORMATION ISOTOPE OF CONCERN IS PU-239 AND DU TAG THAT WAS REMOVED –AREA NO LONGER MEETS FCA REQUIREMENTS

SURVEY RESULTS

ROOM	LOCATION / DATE		ORIGINAL FIXED ACTIVITY ALPHA	ORIGINAL FIXED ACTIVITY BETA	PRESENT FIXED ACTIVITY ALPHA	PRESENT FIXED ACTIVITY BETA	LOOSE CONTAMINATION ALPHA	LOOSE CONTAMINATION BETA	TAG
#	STICKER ID #	YEAR	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	STATUS
288	881-1G	1998	852	1087	570	1087	<20	<200	retagged
288	881-1H	1998	1320	439	1308	<378	<20	<200	retagged
288	881-1K	1999	738	396	582	<378	<20	<200	retagged
288	881-1L	1998	1575	605	1362	<378	<20	<200	retagged
265	881-10	1995	2898	10,883	2856	12,337	<20	<200	retagged
264A	881-12	1995	12432	1562	2432	1562	<20	<200	retagged
233	881-13	1995	5760	799	1308	<378	<20	<200	retagged
233	881-15	1995	27,126	3341	27,126	3341	<20	<200	retagged
233	881-17-A	1995	3750	<380	1308	<378	<20	<200	retagged
233	881-17-B	1995	2895	N/A	2895	N/A	<20	<200	retagged
233	881-18-A	1995	16,830	3535	16,830	3535	<20	<200	retagged
264	881-18-B	1995	6768	590	2238	<378	<20	<200	retagged
264	881-19	1995	1230	<419	534	<378	<20	<200	retagged
299	881-20	1995	1308	<419	984	<378	<20	<200	retagged
299	881-21	1995	1524	<419	768	<378	<20	<200	retagged
245	881-25	1995	14502	1876	8946	1872	<20	<200	retagged
245	881-29	1995	3654	1505	3612	1325	<20	<200	retagged

Date Reviewed 6/22/01 RS Supervision [redacted]

[redacted]

RADIOLOGICAL SAFETY
SURVEY RESULTS

COPY

ROOM	LOCATION / DATE		ORIGINAL FIXED ACTIVITY ALPHA	ORIGINAL FIXED ACTIVITY BETA	PRESENT FIXED ACTIVITY ALPHA	PRESENT FIXED ACTIVITY BETA	LOOSE CONTAMINATION ALPHA	LOOSE CONTAMINATION BETA	TAG
#	STICKER ID #	YEAR	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	DPM/100CM2	STATUS
245	881-31	1995	9654	1447	9654	<378	<20	<200	retagged
245	881-32	1995	5850	<394	1032	<378	<20	<200	retagged
245	881-34	1995	13,926	1879	8471	<378	<20	<200	retagged
236	881-84-B	1997	10,386	2437	1752	<378	<20	<200	retagged
242	881-133	1995	4218	1505	4644	1627	<20	<200	retagged
255	881-202	1999	204	5004	264	2877	<20	<200	[redacted]
312A	881-204	1999	7068	3233	2130	1588	<20	<200	retagged
264A	881-205	2000	24,924	2110	19,596	2254	<20	<200	retagged
241	881-206	2000	1200	<449	1752	<378	<20	<200	retagged
241	881-207	2000	1020	<449	966	<378	<20	<200	retagged
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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ATTACHMENT E-11

B881 (Main) AP-2 Summary Table

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B881 AP-2 SUMMARY
(Isotopic Characterization)

Room	Description	Result
881-F, EF-1	Air Sample	Depleted Uranium
881-F, EF-2	Air Sample	Depleted Uranium
881-F	Floor	Depleted Uranium
206	Drain Residue	Depleted Uranium
313	Plastic Tub	Depleted Uranium
240	Baseboard	Enriched Uranium
121	FCA - Floor	Depleted Uranium
137	SE – Floor corner	Depleted Uranium
161	Floor	Depleted Uranium
161	Floor	Depleted Uranium
296A	Floor – Under Toilet	Depleted Uranium
296A	Floor	Depleted Uranium
240	Floor	Enriched Uranium
296B	West wall	Depleted Uranium
G-2 Trailer	Degreaser Machine	Depleted Uranium
G-2 Trailer	Drain Pipe	Depleted Uranium
G-2 Trailer	Cabinet	Depleted Uranium
G-2 Trailer	Stainless Steel Pipe	Enriched Uranium
137	Electrical J-box	Depleted Uranium
295	File Cabinet	Depleted Uranium
233	Stir plate	Enriched Uranium
144	Punch	Enriched Uranium
144	Caliper	Enriched Uranium
240	Sink	Depleted Uranium
296-B	Piping	Depleted Uranium
296-A	Floor	Depleted Uranium
282	Sink	Depleted Uranium
261	Sink	Depleted Uranium
265	Be Smear - Oven	Enriched Uranium
265	Nigh Vacuum Oven	Enriched Uranium
245	Stainless Steel Cabinet-Smear	Enriched Uranium
245	Stainless Steel Cabinet-Direct	Enriched Uranium
225	Atomic Absorption machine	Depleted Uranium
233	Diamond Plate Roller	Enriched Uranium
233	File Cabinet	Enriched Uranium
121	Lobster Pot	Enriched Uranium
276	Pneumatic Cutter	Enriched Uranium
114-A	Under Stainless Steel Floor	Enriched Uranium
199	Under Stainless Steel Floor	Enriched Uranium
887	Smear from basement wall	Depleted Uranium
121	Rubber Mats-East	Depleted Uranium
121	Rubber Mats - West	Enriched Uranium
121	Skid Pan	Depleted Uranium

Note: Table represents multiple contamination scenarios from air samples, equipment, and building surfaces of B881. AP-2 data was taken from RSC measurements, and in some scenarios, direct measurements of the item itself. All AP-2 results indicated enriched or depleted uranium contamination only (alpha energy range from 4.2 to 4.8 MeV). No weapons grade plutonium contamination (alpha energy range ≅ 5.2 MeV) was detected from AP-2 measurements taken from the main building of B881 (75% of total area). B881 Annex (25% of total area) operations do have limited plutonium-handling history and were not included as a part of this table.

11/05/01

ATTACHMENT E-12

Canberra Gamma Spectroscopy Results

CANBERRA

B881 – STAINLESS STEEL MASLIN CLOTH

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

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CANBERRA


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***************************************************************************
*****          G A M M A   S P E C T R U M   A N A L Y S I S          *****
**  C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s  **
***************************************************************************
```

Report Generated On	10/19/2001 12 41 38 PM
RIN Number	02D0152
Analytical Batch ID	0110194467
Line Item Code	RC10B019

Filename A \G1900007 CNF

Sample Number	02D0152-001 001
Lab Sample Number	CMLS-636
Sample Receipt Date	10/19/2001
Sample Volume Received	0 00E+000 Grams
Result Identifier	NA
Peak Locate Threshold	3 00
Peak Locate Range (in channels)	100 - 8192
Peak Area Range (in channels)	100 - 8192
Identification Energy Tolerance	1 500 keV
Sample (Final Aliquot Size)	1 370E+001 Grams
Sample Quantity Error	0 000E+000
Systematic Error Applied	0 000E+000
Sample Taken On	10/18/2001 7 30 00 AM
Acquisition Started	10/19/2001 9 24 04 AM
Count Time	7200 0 seconds
Real Time	7200 5 seconds
Dead Time	0 01 %

Energy Calibration Used Done On 10/17/01

Energy = -0 580 + 0 250*ch + -4 34E-008*ch^2 + 4 31E-012*ch^3

Corrections Applied

None

Efficiency Calibration Used Done On 10/19/01

Efficiency Geometry ID 02D0152-001 001

Analyzed By Sheri Chambers Date 10/22/01

Reviewed By Larry Umbaugh Date 10/22/01

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CANBERRA

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID 02D0152-001 001

Analytical Batch ID 0110194467

Sample Type (Result Identifier) G19

Lab Sample Number CMLS-636

Geometry ID 02D0152-001 001

Filename A \G1900007 CNF

Detector Name LEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual
Appendix B, Basic Algorithms

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	0 00E+000	0 00E+000	1 32E+001
TL-208	0 00E+000	0 00E+000	8 96E-001
PO-210	0 00E+000	0 00E+000	9 06E+004
BI-212	0 00E+000	0 00E+000	1 53E+001
PB-212	0 00E+000	0 00E+000	9 61E-001
BI-214	0 00E+000	0 00E+000	2 41E+000
PB-214	0 00E+000	0 00E+000	1 67E+000
RA-226	0 00E+000	0 00E+000	9 52E+000
AC-228	0 00E+000	0 00E+000	4 13E+000
TH-230	0 00E+000	0 00E+000	7 44E+001
Th-231	3 18E+001	5 48E+000	3 73E+000
PA-234	0 00E+000	0 00E+000	1 04E+000
PA-234M	0 00E+000	0 00E+000	1 19E+002
TH-234	0 00E+000	0 00E+000	7 28E+000
U-235	3 14E+001	4 28E+000	5 89E-001
AM-241	0 00E+000	0 00E+000	7 78E-001

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CANBERRA

B881 – STACK 2 CONCRETE FOUNDATION

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

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CANBERRA

Analysis Results Header   10/23/2001 11 44 05 AM

```
*************************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
*************************************************************************
```

Report Generated On	10/23/2001 11 44 05 AM
RIN Number	02S0009
Analytical Batch ID	0110174453
Line Item Code	RC10B011

Filename C \PW CMLS\B881 pad\OBJ00202 CNF

Sample Number	02S0009-001 001
Lab Sample Number	CMLS-615
Sample Receipt Date	10/17/2001
Sample Volume Received	1 00E+000 CM2
Result Identifier	N/A
Peak Locate Threshold	3 00
Peak Locate Range (in channels)	50 - 8192
Peak Area Range (in channels)	50 - 8192
Identification Energy Tolerance	1 000 keV
Sample (Final Aliquot Size)	7 000E+004 CM2
Sample Quantity Error	0 000E+000
Systematic Error Applied	0 000E+000
Sample Taken On	10/17/2001 12 07 40 PM
Acquisition Started	10/17/2001 12 07 40 PM
Count Time	14400 0 seconds
Real Time	14429 6 seconds
Dead Time	0 21 %

Energy Calibration Used Done On   7/10/01
Energy =   0 441 +   0 250*ch + 6 37E-008*ch^2 + -1 05E-011*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On   10/17/01
Efficiency Geometry ID   EFFIC_ONLY

Analyzed By Paul Wojtaszek   Date 10/23/01

Reviewed By Larry Umbaugh   Date 10/23/01

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CANBERRA

Sample and QC Sample Results Summary   10/23/01 11 44 07 AM

****

*****   Sample and QC Sample Results Summary   *****

****

Site Sample ID   02S0009-001 001

Analytical Batch ID   0110174453

Sample Type (Result Identifier)   OBJ

Lab Sample Number   CMLS-615

Geometry ID   EFFIC_ONLY

Filename   C \PW CMLS\B881 pad\OBJ00202 CNF

Detector Name   BEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual
Appendix B, Basic Algorithms

Analyte	Activity (dpm/CM2)	2-Sigma Uncertainty (dpm/CM2)	MDA (dpm/CM2)
K-40	4 20E+002	7 45E+002	5 56E+000
TL-208	0 00E+000	0 00E+000	6 09E-001
PO-210	0 00E+000	0 00E+000	3 11E+004
BI-212	0 00E+000	0 00E+000	6 25E+000
PB-212	5 09E+000	7 15E-001	7 29E-001
BI-214	0 00E+000	0 00E+000	1 23E+000
PB-214	6 19E+000	9 18E-001	1 01E+000
RA-226	2 16E+001	6 39E+000	9 37E+000
AC-228	0 00E+000	0 00E+000	2 19E+000
TH-230	0 00E+000	0 00E+000	6 65E+001
Th-231	0 00E+000	0 00E+000	3 80E+000
PA-234	0 00E+000	0 00E+000	1 10E+000
PA-234M	0 00E+000	0 00E+000	5 02E+001
TH-234	0 00E+000	0 00E+000	5 40E+000
U-235	0 00E+000	0 00E+000	4 77E-001
AM-241	0 00E+000	0 00E+000	6 89E-001

CANBERRA

Analysis Results Header 10/23/2001 11 45 54 AM

```
*************************************************************************
*****      G A M M A   S P E C T R U M   A N A L Y S I S          *****
** C a n b e r r a   M o b i l e   L a b o r a t o r y   S e r v i c e s **
*************************************************************************
```

Report Generated On	10/23/2001 11 45 54 AM
RIN Number	02S0009
Analytical Batch ID	0110174453
Line Item Code	RC10B011

Filename C \PW CMLS\B881 pad\OBJ00204 CNF

Sample Number	02S0009-002 001
Lab Sample Number	CMLS-616
Sample Receipt Date	10/18/2001
Sample Volume Received	1 00E+000 cm2
Result Identifier	N/A
Peak Locate Threshold	3 00
Peak Locate Range (in channels)	50 - 8192
Peak Area Range (in channels)	50 - 8192
Identification Energy Tolerance	1 000 keV
Sample (Final Aliquot Size)	7 000E+004 cm2
Sample Quantity Error	0 000E+000
Systematic Error Applied	0 000E+000
Sample Taken On	10/18/2001 8 36 47 AM
Acquisition Started	10/18/2001 8 36 47 AM
Count Time	7721 9 seconds
Real Time	7737 6 seconds
Dead Time	0 20 %

Energy Calibration Used Done On 7/10/01
Energy = 0 441 + 0 250*ch + 6 37E-008*ch^2 + -1 05E-011*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On 10/17/01
Efficiency Geometry ID EFFIC_ONLY

Analyzed By Paul Wojtaszek Date 10/23/01

Reviewed By Larry Umbaugh Date 10/23/01

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CANBERRA

Sample and QC Sample Results Summary   10/23/01 11 45 55 AM

****

*****   Sample and QC Sample Results Summary   *****

****

Site Sample ID   02S0009-002 001

Analytical Batch ID   0110174453

Sample Type (Result Identifier)   OBJ

Lab Sample Number   CMLS-616

Geometry ID   EFFIC_ONLY

Filename C \PW CMLS\B881 pad\OBJ00204 CNF

Detector Name   BEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual
Appendix B, Basic Algorithms

Analyte	Activity (dpm/cm2)	2-Sigma Uncertainty (dpm/cm2)	MDA (dpm/cm2)
K-40	3 94E+002	6 99E+002	9 14E+000
TL-208	3 96E+000	6 23E-001	7 27E-001
PO-210	0 00E+000	0 00E+000	4 48E+004
BI-212	0 00E+000	0 00E+000	8 43E+000
PB-212	4 52E+000	8 09E-001	7 78E-001
BI-214	1 04E+001	1 41E+000	1 36E+000
PB-214	5 94E+000	1 12E+000	1 31E+000
RA-226	0 00E+000	0 00E+000	1 06E+001
AC-228	1 32E+001	2 13E+000	2 30E+000
TH-230	0 00E+000	0 00E+000	9 18E+001
Th-231	0 00E+000	0 00E+000	5 31E+000
PA-234	0 00E+000	0 00E+000	1 50E+000
PA-234M	0 00E+000	0 00E+000	6 36E+001
TH-234	0 00E+000	0 00E+000	7 45E+000
U-235	0 00E+000	0 00E+000	6 53E-001
AM-241	0 00E+000	0 00E+000	9 48E-001

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CANBERRA

Sample and QC Sample Results Summary   10/23/01 11 47 14 AM

****
*****   Sample and QC Sample Results Summary   *****
****

Site Sample ID   02S0009-003 001

Analytical Batch ID   0110174453

Sample Type (Result Identifier) OBJ

Lab Sample Number   CMLS-617

Geometry ID   EFFIC_ONLY

Filename C \PW CMLS\B881 pad\OBJ00205 CNF

Detector Name BEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (dpm/cm2)	2-Sigma Uncertainty (dpm/cm2)	MDA (dpm/cm2)
K-40	4 03E+002	7 13E+002	1 12E+001
TL-208	5 03E+000	8 81E-001	1 06E+000
PO-210	0 00E+000	0 00E+000	6 92E+004
BI-212	0 00E+000	0 00E+000	1 21E+001
PB-212	7 29E+000	1 14E+000	1 23E+000
BI-214	9 90E+000	1 85E+000	2 29E+000
PB-214	8 28E+000	1 46E+000	1 78E+000
RA-226	0 00E+000	0 00E+000	1 54E+001
AC-228	0 00E+000	0 00E+000	4 87E+000
TH-230	0 00E+000	0 00E+000	1 36E+002
Th-231	0 00E+000	0 00E+000	7 86E+000
PA-234	0 00E+000	0 00E+000	2 23E+000
PA-234M	0 00E+000	0 00E+000	9 77E+001
TH-234	0 00E+000	0 00E+000	1 09E+001
U-235	0 00E+000	0 00E+000	9 57E-001
AM-241	0 00E+000	0 00E+000	1 42E+000

CANBERRA

Sample and QC Sample Results Summary   10/23/01 12 35 53 PM

****
*****   Sample and QC Sample Results Summary   *****
****

Site Sample ID   02S0009-004 001

Analytical Batch ID   0110174453

Sample Type (Result Identifier)   OBJ

Lab Sample Number   CMLS-618

Geometry ID   EAST_PAD

Filename   C \PW CMLS\B881 pad\OBJ00206 CNF

Detector Name   BEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual
Appendix B, Basic Algorithms

Analyte	Activity (dpm/cm2)	2-Sigma Uncertainty (dpm/cm2)	MDA (dpm/cm2)
K-40	0 00E+000	0 00E+000	6 90E+001
TL-208	0 00E+000	0 00E+000	4 67E+000
PO-210	0 00E+000	0 00E+000	2 66E+005
BI-212	0 00E+000	0 00E+000	4 50E+001
PB-212	2 32E+001	4 23E+000	5 05E+000
BI-214	0 00E+000	0 00E+000	9 39E+000
PB-214	2 47E+001	5 19E+000	7 15E+000
RA-226	0 00E+000	0 00E+000	5 57E+001
AC-228	0 00E+000	0 00E+000	1 72E+001
TH-230	0 00E+000	0 00E+000	4 25E+002
Th-231	0 00E+000	0 00E+000	2 50E+001
PA-234	0 00E+000	0 00E+000	7 48E+000
PA-234M	0 00E+000	0 00E+000	3 60E+002
TH-234	0 00E+000	0 00E+000	3 55E+001
U-235	0 00E+000	0 00E+000	3 46E+000
AM-241	0 00E+000	0 00E+000	4 28E+000

CANBERRA

B887 – CORRUGATED TRANSITE ROOF

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

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CANBERRA


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*************************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
*************************************************************************
```

Report Generated On	10/24/2001 9 26 03 AM
RIN Number	02D0176
Analytical Batch ID	0110234467
Line Item Code	RC10B019

Filename A \G1900011 CNF

Sample Number	02D0176-001 001
Lab Sample Number	CMLS-639
Sample Receipt Date	10/23/2001
Sample Volume Received	8 22E+001 GRAMS
Result Identifier	N/A
Peak Locate Threshold	3 00
Peak Locate Range (in channels)	100 - 8192
Peak Area Range (in channels)	100 - 8192
Identification Energy Tolerance	1 500 keV
Sample (Final Aliquot Size)	8 220E+001 GRAMS
Sample Quantity Error	0 000E+000
Systematic Error Applied	0 000E+000
Sample Taken On	10/23/2001 12 00 00 PM
Acquisition Started	10/24/2001 7 20 43 AM
Count Time	3600 0 seconds
Real Time	3600 2 seconds
Dead Time	0 01 %

Energy Calibration Used Done On 10/17/01

Energy = -0 580 + 0 250*ch + -4 34E-008*ch^2 + 4 31E-012*ch^3

Corrections Applied

None

Efficiency Calibration Used Done On 10/24/01

Efficiency Geometry ID 02D0176-001 001

Analyzed By Sheri Chambers Date 10/24/01

Reviewed By Larry Umbaugh Date 10/24/01

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CANBERRA

***** Sample and QC Sample Results Summary *****

Site Sample ID 02D0176-001 001

Analytical Batch ID 0110234467

Sample Type (Result Identifier) G19

Lab Sample Number CMLS-639

Geometry ID 02D0176-001 001

Filename A \G1900011 CNF

Detector Name LEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (pCi/GRAMS)	2-Sigma Uncertainty (pCi/GRAMS)	MDA (pCi/GRAMS)
K-40	0 00E+000	0 00E+000	4 15E+000
TL-208	0 00E+000	0 00E+000	2 52E-001
PO-210	0 00E+000	0 00E+000	2 08E+004
BI-212	0 00E+000	0 00E+000	3 20E+000
PB-212	0 00E+000	0 00E+000	2 62E-001
BI-214	0 00E+000	0 00E+000	5 23E-001
PB-214	0 00E+000	0 00E+000	4 19E-001
RA-226	0 00E+000	0 00E+000	2 37E+000
AC-228	0 00E+000	0 00E+000	8 80E-001
TH-230	0 00E+000	0 00E+000	9 68E+000
Th-231	0 00E+000	0 00E+000	6 39E-001
PA-234	0 00E+000	0 00E+000	1 60E-001
PA-234M	0 00E+000	0 00E+000	2 13E+001
TH-234	0 00E+000	0 00E+000	9 86E-001
U-235	0 00E+000	0 00E+000	1 45E-001
AM-241	0 00E+000	0 00E+000	1 23E-001

CANBERRA

B881 – CONSENT ORDER ROOM

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

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CANBERRA


```
*************************************************************************
*****        G A M M A   S P E C T R U M   A N A L Y S I S        *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
*************************************************************************
```

Report Generated On	10/29/2001 11 51 08 AM
RIN Number	02D0219
Analytical Batch ID	0110294467
Line Item Code	RC10B019

Filename A \G1900012 CNF

Sample Number	02D0219-001 001
Lab Sample Number	CMLS-665
Sample Receipt Date	10/29/2001
Sample Volume Received	0 00E+000 Grams
Result Identifier	N/A
Peak Locate Threshold	3 00
Peak Locate Range (in channels)	100 - 8192
Peak Area Range (in channels)	100 - 8192
Identification Energy Tolerance	1 500 keV
Sample (Final Aliquot Size)	5 000E+000 Grams
Sample Quantity Error	0 000E+000
Systematic Error Applied	0 000E+000
Sample Taken On	10/25/2001 1 00 00 PM
Acquisition Started	10/29/2001 10 21 49 AM
Count Time	3600 0 seconds
Real Time	3600 2 seconds
Dead Time	0 00 %

Energy Calibration Used Done On 10/17/01
Energy = -0 580 + 0 250*ch + -4 34E-008*ch^2 + 4 31E-012*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On 10/29/01
Efficiency Geometry ID 02D0219-001 001

Analyzed By Marilyn Umbaugh Date 10/29/01

Reviewed By Larry Umbaugh Date 10/29/01

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****
***** Sample and QC Sample Results Summary *****
****

Sıte Sample ID 02D0219-001 001

Analytıcal Batch ID 0110294467

Sample Type (Result Identıfıer) G19

Lab Sample Number CMLS-665

Geometry ID 02D0219-001 001

Fılename A \G1900012 CNF

Detector Name LEGE

MDA = Curıe method as specıfıed ın Genıe-2000 Customızatıon Tools Manual Appendıx B, Basıc Algorıthms

Analyte	Actıvıty (pCı/Grams)	2-Sıgma Uncertaınty (pCı/Grams)	MDA (pCı/Grams)
K-40	0 00E+000	0 00E+000	2 68E+001
TL-208	0 00E+000	0 00E+000	2 47E+000
PO-210	0 00E+000	0 00E+000	1 95E+005
BI-212	0 00E+000	0 00E+000	2 22E+001
PB-212	0 00E+000	0 00E+000	1 93E+000
BI-214	0 00E+000	0 00E+000	5 30E+000
PB-214	0 00E+000	0 00E+000	3 10E+000
RA-226	0 00E+000	0 00E+000	2 61E+001
AC-228	0 00E+000	0 00E+000	6 07E+000
TH-230	0 00E+000	0 00E+000	8 38E+001
Th-231	0 00E+000	0 00E+000	5 12E+000
PA-234	0 00E+000	0 00E+000	1 52E+000
PA-234M	0 00E+000	0 00E+000	2 02E+002
TH-234	0 00E+000	0 00E+000	6 14E+000
U-235	0 00E+000	0 00E+000	1 58E+000
AM-241	0 00E+000	0 00E+000	1 02E+000

CANBERRA

B881 – STACK 2 INTERIOR

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

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CANBERRA

Analysis Results Header 10/29/2001 1 15 27 PM Page 1

```
***********************************************************************
*****         G A M M A   S P E C T R U M   A N A L Y S I S     *****
** C a n b e r r a  M o b i l e  L a b o r a t o r y  S e r v i c e s **
***********************************************************************
```

Report Generated On	10/29/2001 1 15 27 PM
RIN Number	02D0220
Analytical Batch ID	0110294467
Line Item Code	RC10B019
Filename A \G1900013 CNF	
Sample Number	02D0220-001 001
Lab Sample Number	CMLS-666
Sample Receipt Date	10/29/2001
Sample Volume Received	0 00E+000 Grams
Result Identifier	N/A
Peak Locate Threshold	3 00
Peak Locate Range (in channels)	100 - 8192
Peak Area Range (in channels)	100 - 8192
Identification Energy Tolerance	1 500 keV
Sample (Final Aliquot Size)	6 000E+000 Grams
Sample Quantity Error	0 000E+000
Systematic Error Applied	0 000E+000
Sample Taken On	10/25/2001 1 00 00 PM
Acquisition Started	10/29/2001 11 29 23 AM
Count Time	3600 0 seconds
Real Time	3600 2 seconds
Dead Time	0 00 %

Energy Calibration Used Done On 10/17/01
Energy = -0 580 + 0 250*ch + -4 34E-008*ch^2 + 4 31E-012*ch^3

Corrections Applied
None

Efficiency Calibration Used Done On 10/29/01
Efficiency Geometry ID 02D0220-001 001

Analyzed By Marilyn Umbaugh Date 10/29/01

Reviewed By Larry Umbaugh Date 10/29/01

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CANBERRA

****
*****   Sample and QC Sample Results Summary   *****
****

Site Sample ID   02D0220-001 001

Analytical Batch ID   0110294467

Sample Type (Result Identifier) G19

Lab Sample Number   CMLS-666

Geometry ID   02D0220-001 001

Filename A \G1900013 CNF

Detector Name   LEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B, Basic Algorithms

Analyte	Activity (pCi/Grams)	2-Sigma Uncertainty (pCi/Grams)	MDA (pCi/Grams)
K-40	0 00E+000	0 00E+000	3 01E+001
TL-208	0 00E+000	0 00E+000	2 06E+000
PO-210	0 00E+000	0 00E+000	1 57E+005
BI-212	0 00E+000	0 00E+000	2 98E+001
PB-212	0 00E+000	0 00E+000	1 77E+000
BI-214	0 00E+000	0 00E+000	4 63E+000
PB-214	0 00E+000	0 00E+000	2 84E+000
RA-226	0 00E+000	0 00E+000	2 28E+001
AC-228	0 00E+000	0 00E+000	5 95E+000
TH-230	0 00E+000	0 00E+000	8 05E+001
Th-231	0 00E+000	0 00E+000	4 14E+000
PA-234	0 00E+000	0 00E+000	1 28E+000
PA-234M	0 00E+000	0 00E+000	1 71E+002
TH-234	0 00E+000	0 00E+000	6 41E+000
U-235	0 00E+000	0 00E+000	1 43E+000
AM-241	0 00E+000	0 00E+000	9 08E-001

ATTACHMENT F

Chemical Data Summaries and Sample Maps

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Table F.1 HISTORICAL BERYLLIUM DATA SUMMARY

(Locations of Be Contamination > 0 2 μg/100 cm^2 highlighted in bold)

Room	Number of Samples	Range of Values (ug/100 gm)	Number of Samples >0.1 ug/100 cm2	Number of Samples >0.2 ug/100 cm2
0	5	<0 1000	0	0
10	**26**	**<0 1000 - 0.5050**	**2**	**2**
101	29	<0 1000	0	0
104	20	<0 1000	0	0
10B	20	<0 1000	0	0
10C	5	<0 1000	0	0
110	10	<0 1000	0	0
110L	10	<0 1000	0	0
111	1	<0 1000	0	0
112	42	<0 1000	0	0
112B	7	<0 1000	0	0
113	**82**	**<0.0167-1.4900**	**2**	**1**
113A	13	<0 1000	0	0
113B	20	<0 0200 - <0 1000	0	0
113C	**19**	**<0.0500 - 0.4000**	**1**	**1**
114	**163**	**<0 1000 -.3400**	**2**	**1**
114A	90	<0 1000	0	0
114B	37	<0 0200 - <0 1000	0	0
114C	1	<0 1000	0	0
114D	112	<0 0333 - <0 1000	0	0
114F	10	<0 1000	0	0
114G	4	<0 0100	0	0
114J	12	<0 1000	0	0
114M	148	<0 1000	0	0
115	12	<0 1000	0	0
115A	4	<0 1000	0	0
115B	6	<0 1000	0	0
115C	4	<0 1000	0	0
115D	4	<0 1000	0	0
115E	4	<0 1000	0	0
115F	1	<0 1000	0	0
116	84	<0 1000 - 0 1100	1	0
118	2	<0 1000	0	0
119	5	<0 1000	0	0
12	4	<0 1000	0	0
121	**106**	**<0 0250 - 0.7250**	**3**	**1**
122	139	<0 0167 - <0 1000	0	0
125	7	<0 1000	0	0
125A	5	<0 1000	0	0
125B	5	<0 1000	0	0
125D	4	<0 1000	0	0
125E	7	<0 1000	0	0

Room	Number of Samples	Range of Values (ug/100 gm)	Number of Samples >0 1 ug/100 cm2	Number of Samples >0.2 ug/100 cm2
127	10	<0 1000-0 1450	2	0
127B	17	<0 1000	0	0
127C	13	<0 1000-0 1390	1	0
127C 1	8	<0 1000	0	0
130	11	<0 1000-0 1090	1	0
131	**17**	**<0.1000-0 8870**	**8**	**5**
131B	14	<0 1000-0 1700	3	0
131C	8	<0 1000	0	0
131D	18	<0 1000-0 1780	1	0
133	5	<0 1000	0	0
137	**58**	**<0 1000-12.300**	**3**	**3**
137A	**20**	**<0.1000-0.9000**	**6**	**4**
137B	3	<0 1000-0 1630	1	0
137C	**3**	**<0.1000-0.3580**	**2**	**2**
137D	**26**	**<0.1000-98.900**	**14**	**10**
138	23	0 0500-<0 1000	8	0
139	**47**	**<0.1000-0 1760**	**36**	**3**
143	68	<0 1000	0	0
143A	**19**	**<0 1000-0 3800**	**2**	**1**
143B	76	<0 1000	0	0
143C	47	<0 1000	0	0
143D	58	<0 1000-0 1700	2	0
143E	29	<0 1000	0	0
143F	38	<0 1000	0	0
144A	10	<0 1000	0	0
144	**147**	**<0 0300-0.3000**	**1**	**1**
148	2	<0 1000	0	0
148A	2	<0 1000	0	0
149	1	<0 1000	0	0
15	9	<0 1000	0	0
15A	**20**	**<0.1000 - 54.9000**	**4**	**16**
154A	1	<0 1000	0	0
154B	5	<0 1000	0	0
154C	2	<0 1000	0	0
154D	3	<0 1000	0	0
154E	4	<0 1000	0	0
154F	4	<0 1000	0	0
154G	2	<0 1000	0	0
154H	7	<0 1000	0	0
154I	7	<0 1000	0	0
154J	3	<0 1000	0	0
154K	2	<0 1000	0	0
154L	2	<0 1000	0	0
159	1	<0 1000	0	0
160	56	<0 1000	0	0
161	91	<0 0200-0 1300	1	0
163	3	<0 1000	0	0

Room	Number of Samples	Range of Values (ug/100 gm)	Number of Samples >0.1 ug/100 cm2	Number of Samples >0.2 ug/100 cm2
168	59	<0 0200-<0 1000	0	0
169	48	<0 1000-0 1800	1	0
170	8	<0 1000	0	0
170A	2	<0 1000	0	0
171	33	<0 1000	0	0
171A	13	<0 1000	0	0
199	21	<0 1000	0	0
199A	50	<0 1000	0	0
199C	37	<0 1000	0	0
201	6	<0 1000	0	0
208	1	<0 1000	0	0
212	22	<0 1000	0	0
212A	3	<0 1000	0	0
212B	7	<0 1000	0	0
216	4	<0 1000	0	0
222	11	<0 1000	0	0
223	12	<0 1000	0	0
224	**107**	**<0 0500-0 3900**	**9**	**6**
225	**76**	**<0 1000-10.5000**	**2**	**1**
225B	4	<0 1000	0	0
226	16	<0 1000	0	0
227	**45**	**<0 0500-2 8000**	**8**	**3**
229	18	<0 1000	0	0
229A	5	<0 1000	0	0
230A	1	<0 1000	0	0
231	8	<0 1000	0	0
231'	28	<0 1000	0	0
233	32	<0 1000	0	0
234	1	<0 1000	0	0
234A	3	<0 1000	0	0
235	61	<0.1000	0	0
235D	8	<0 1000	0	0
235E	3	<0 1000	0	0
235F	12	<0 1000	0	0
236	12	<0 1000	0	0
237	1	<0 1000	0	0
238	17	<0 1000	0	0
241	2	<0 1000	0	0
242	98	<0 1000	0	0
244	**280**	**<0.0200-0 5170**	**5**	**4**
245	**239**	**<0.1000-0.2400**	**1**	**1**
245C	4	<0 1000	0	0
245D	**2**	**<0.1000-0 3000**	**1**	**1**
246	42	<0 1000	0	0
247	79	<0 1000	0	0
247A	1	<0 1000	0	0
248	10	<0 1000-0 1300	1	0

Room	Number of Samples	Range of Values (ug/100 gm)	Number of Samples >0.1 ug/100 cm2	Number of Samples >0.2 ug/100 cm2
248A	15	<0 1000	0	0
248B	**23**	**<0.1000-0.3000**	**1**	**1**
248C	9	<0 1000	0	0
248D	16	<0 1000	0	0
249A	19	<0 1000	0	0
249B	10	<0 1000	0	0
251	3	<0 0500	0	0
253	29	<0 1000	0	0
254	58	<0 1000	0	0
255	27	<0 1000-0 1300	1	0
258	3	<0 1000	0	0
260	2	<0 1000	0	0
261	2	<0 1000	0	0
264	70	<0 1000	0	0
264A	5	<0 1000	0	0
265	**53**	**<0.1000-1.5100**	**3**	**3**
265A	9	<0 1000	0	0
265B	2	<0 1000	0	0
266	**154**	**<0 0500-0 4820**	**4**	**2**
266A	3	<0 1000	0	0
266B	3	<0 1000	0	0
266C	1	<0 1000	0	0
266D	29	<0 1000	0	0
267	5	<0 1000	0	0
267A	9	<0 1000	0	0
268	12	<0 1000	0	0
268A	15	<0 1000	0	0
269	9	<0 1000	0	0
270	3	<0 1000-0 1500	1	0
271	1	<0 1000	0	0
272	74	<0 1000	0	0
275	14	<0 0333	0	0
275A	4	<0 0333	0	0
276	109	<0 1000	0	0
278	23	<0 0333-<0 1000	0	0
278A	2	<0 0333-<0 1000	0	0
278C	3	<0 0333-<0 1000	0	0
278E	2	<0 0333	0	0
278F	3	<0 0333	0	0
278G	2	<0 1000	0	0
278H	2	<0 0333	0	0
279	2	<0 1000	0	0
280	6	<0 1000	0	0
280A	76	<0 0333-<0 1000	0	0
281	3	<0 1000	0	0
281A	1	<0 1000	0	0
282	80	<0 1000	0	0

Room	Number of Samples	Range of Values (ug/100 gm)	Number of Samples >0.1 ug/100 cm2	Number of Samples >0.2 ug/100 cm2
283	14	<0 1000	0	0
283A	6	<0 1000	0	0
284	11	<0 1000	0	0
285	24	<0 1000	0	0
286	6	<0 1000	0	0
292	14	<0 1000	0	0
293	14	<0 1000	0	0
293A	20	<0 1000	0	0
294	60	<0 1000	0	0
296	134	<0 1000	0	0
296A	20	<0 1000	0	0
296B	2	<0 1000	0	0
296D	16	<0 1000	0	0
297	2	<0 1000	0	0
299	27	<0 1000	0	0
300	16	<0 1000	0	0
302	5	<0 1000	0	0
309C	11	<0 1000	0	0
309F	16	<0 1000	0	0
309G	5	<0 1000	0	0
309H	22	<0 1000	0	0
310	20	<0 1000	0	0
313	51	<0 1000	0	0
314	22	<0 1000	0	0
317	24	<0 1000	0	0
318	2	<0 1000	0	0
320	1	<0 1000	0	0
881F	**43**	**<0.1000-0.3000**	**0**	**1**

Table F.2 Beryllium Sampling in Data Gap Rooms in the 881 Cluster

Sample Number	Sample Location	Result (µg/100 cm^2)
881-09212001-213-241	Stack 1, inside bottom on inside of door	<0 1
881-09212001-213-242	Stack 1, inside bottom on steel frame	<0 1
881-09212001-213-243	Stack 1, inside bottom on steel frame	<0 1
881-09212001-213-244	Stack 1, inside bottom on steel frame	<0 1
881-09212001-213-245	Stack 1, inside bottom on cement	<0 1
881-09212001-213-246	Stack 1, inside bottom on lip of door	<0 1
881-10042001-601-011	Stack 2 inside, outside	<0 1
881-10042001-601-012	Stack 2 inside, outside	<0 1
881-10042001-601-013	Stack 2 inside, outside	<0 1
881-10042001-601-014	Stack 2 inside, outside	<0 1
881-10042001-601-015	Stack 2 inside, outside	<0 1
881-10042001-601-016	Stack 2 inside, outside	<0 1
881-10042001-601-017	Stack 2 inside, outside	<0 1
881-10042001-601-018	Stack 2 inside, outside	<0 1
881-10042001-601-019	Stack 2 inside, outside	<0 1
881-10042001-601-020	Stack 2 inside, outside	<0 1
881-10042001-601-021	On floor, north section of room, outside	<0 1
881-10042001-601-022	On floor, south section of room, outside	<0 1
881-10042001-601-023	On floor, east section of room, outside	<0 1
881-10042001-601-024	On floor, west section of room, outside	<0 1
881-10042001-601-025	North wall, outside	<0 1
881-10042001-601-026	South wall, outside	<0 1
881-8162001-315-101	Stack 3 – interior vertical surface, east side	<0 1
881-8162001-315-102	Stack 3 – interior vertical surface, south side	<0 1
881-8162001-315-103	Stack 3 – interior vertical surface, north side	<0 1
881-8242001-315-101	Room 248, sump	<0 1
881-8242001-315-102	Room 248, sump	<0 1
881-8282001-315-103	Room 10, Trench	<0 1
881-8282001-315-104	Room 10, Trench	<0 1
881-8282001-315-105	Room 10, Trench	<0 1
881-8282001-315-106	Room 10, Trench	<0 1
881-8282001-315-107	Room 10, Trench	<0 1
881-8282001-315-108	Room 10, Trench	<0 1
881-8282001-315-109	Room 10, Trench	<0 1
881-8282001-315-110	Room 10, Trench	<0 1
881-9062001-315-111	NW Elevator floor	<0 1
881-9062001-315-112	NW Elevator floor	<0 1
881-9062001-315-113	Room 10, south elevator, south wall	<0 1
881-9062001-315-114	Room 10, south elevator, north wall	<0 1
881-9062001-315-115	Main elevator floor	<0 1
881-9062001-315-116	Main elevator floor	<0 1
881-9132001-315-117	Room 10, NE sump	<0 1
881-9132001-315-118	Room 10, NE sump	<0 1
881-9132001-315-119	Room 10, SE sump	<0 1
881-9132001-315-120	Room 10, SE sump	<0 1

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Sample Number	Sample Location	Result (ug/100 cm²)
881-9132001-315-121	Room 249A, 3' x 3' x 18" Pit	<0 1
881-9132001-315-122	Room 249A, 3' x 3' x 18" Pit	0 179
881-9132001-315-123	Room 249B, 3' x 3' x 18" Pit	<0 1
881-9132001-315-124	Room 249B, 3' x 3' x 18" Pit	<0 1
881-09202001-601-101	Room 114A – Top of file cabinet, SW area	<0 1
881-09202001-601-102	Room 114A – Top of refrigerator, center	<0 1
881-09202001-601-103	Room 114A – Top of pump, center	<0 1
881-09202001-601-104	Room 114A –On floor, center	<0 1
881-09202001-601-105	Room 114A – On file cabinet, SE area	<0 1
881-09202001-601-106	Room 114A – On table, SE area	<0 1
881-09202001-601-107	Room 114A – On crate, NE area	<0 1
881-09202001-601-108	Room 114A – On junk pile, NE corner	<0 1
881-09202001-601-109	Room 114A -- On overhead light fixture, East area	<0 1
881-09202001-601-110	Room 114A -- On overhead light fixture, East area	<0 1
881-09202001-601-111	Room 114A -- On overhead light fixture, West area	<0 1
881-09202001-601-112	Room 114A -- On overhead light fixture, West area	<0 1
881-09202001-601-113	Room 114A – On floor, center	<0 1
881-09202001-601-114	Room 114A – On floor, center	<0 1
881-09202001-601-115	Room 114A – On file cabinet, NW area	<0 1
881-09202001-601-116	Room 114A – On plastic covering of acid scrubber, NE area	<0 1
881-09202001-601-117	Room 114A – On mill, north area	<0 1
881-09202001-601-118	Room 114A – On mill, north area	<0 1
881-09202001-601-119	Room 114A – On floor, east area	<0 1
881-09202001-601-120	Room 114A – On electrical equipment, NE area	<0 1
881-09202001-601-121	Room 114A – On raised yellow pipe, NE area	<0 1
881-09202001-601-122	Room 114A – On electrical equipment, NE area	<0 1
881-09202001-601-123	Room 114A – On air conditioner, east area	<0 1
881-09202001-601-124	Room 114A – On floor, east area	<0 1
881-09202001-601-125	Room 114A – On overhead beam, center	<0 1
881-09202001-601-126	Room 114A – On overhead beam, center	<0 1
881-09202001-601-127	Room 114A – On plastic covering of acid scrubber, NE area	<0 1
881-09202001-601-128	Room 114A -- On plastic covering of acid scrubber, NE area	<0 1
881-09202001-601-129	Room 114A – On machinery, north area	<0 1
881-09202001-601-130	Room 114A – On up-side-down table, north area	<0 1
881-10092001-213-141	Room 127A – middle north end of room	<0 1
881-10092001-213-142	Room 127A – middle north end of room	<0 1
881-10092001-213-143	Room 127A – Top of table east side	0 115
881-10092001-213-144	Room 127A – middle of room, south	2 97
881-10092001-213-145	Room 127A – middle of room, south	<0 1
881-10092001-213-146	Room 127A – fume hood, southwest corner	<0 1
881-10092001-213-147	Room 127A – Top of cabinet post RA, RWP required, south	<0 1
881-10092001-213-148	Room 127A – fume hood, east wall	1 64
881-10092001-213-149	Room 127A – box on table, NE corner	0 227
881-10092001-213-150	Room 127A – Top of table, NW corner	0 118
881-10022001-315-301	Under Stainless Steel floor, sample point 10, Room 232	<0 1
881-10022001-315-302	Under Stainless Steel floor, sample point 40, Room 231	<0 1
881-10022001-315-303	Under Stainless Steel floor, sample point 39, Room231	<0 1
881-10022001-315-304	Under Stainless Steel floor, sample point 30, Room 114F	<0 1
881-10022001-315-305	Under Stainless Steel floor, sample point 44, Room 199	<0 1

Sample Number	Sample Location	Result ($\mu g/100\ cm^2$)
881-10022001-315-306	Under Stainless Steel floor, sample point 45, Room 199	<0 1
881-10022001-315-307	Under Stainless Steel floor, sample point 23, Room 238	<0 1
881-10022001-315-308	Under Stainless Steel floor, sample point 43, Room 253	<0 1
881-10022001-315-309	Under Stainless Steel floor, sample point 14, Room 232	<0 1
881-10022001-315-310	Under Stainless Steel floor, sample point 13, Room 232	<0 1
881-10022001-315-311	Under Stainless Steel floor, sample point 22, Room 232	<0 1
881-10022001-315-312	Under Stainless Steel floor, sample point 20, Room 232	<0 1
881-10022001-315-313	Under Stainless Steel floor, sample point 17, Room 114H	<0 1
881-10022001-315-314	Under Stainless Steel floor, sample point 9, Room 114H	<0 1
881-10022001-315-315	Under Stainless Steel floor, sample point 4, Room 114H	<0 1
881-10022001-315-316	Under Stainless Steel floor, sample point 6, Room 244	<0 1
881-10022001-315-317	Under Stainless Steel floor, sample point 21, Room 238A	<0 1
881-10022001-315-318	Under Stainless Steel floor, sample point 36, Room 114H	<0 1
881-10022001-315-319	Under Stainless Steel floor, sample point 7, Room 235	<0 1
881-10022001-315-320	Under Stainless Steel floor, sample point 33, Room 114	<0 1
881-10022001-315-321	Under Stainless Steel floor, sample point 3, Room 114H	<0 1
881-10022001-315-322	Under Stainless Steel floor, sample point 25, Room 245	<0 1
881-10022001-315-323	Under Stainless Steel floor, sample point 29, Room 114D	<0 1
881-10022001-315-324	Under Stainless Steel floor, sample point 34, Room 114D	<0 1
881-10022001-315-325	Under Stainless Steel floor, sample point 46, Room 316	<0 1
881-10022001-315-326	Under Stainless Steel floor, sample point 28, Room 244	<0 1
881-10022001-315-327	Under Stainless Steel floor, sample point 1, Room 232	<0 1
881-10022001-315-328	Under Stainless Steel floor, sample point 47, Room 199	<0 1
881-10022001-315-329	Under Stainless Steel floor, sample point 16, Room 235C	<0 1
881-10022001-315-330	Under Stainless Steel floor, sample point 42, Room 253	<0 1
881-10022001-315-331	Under Stainless Steel floor, sample point 38, Room 232	<0 1
881-10022001-315-332	Under Stainless Steel floor, sample point 12, Room 114	<0 1
881-10022001-315-333	Under Stainless Steel floor, sample point 5, Room 114	<0 1
881-10022001-315-334	Under Stainless Steel floor, sample point 32, Room 199	<0 1
881-10022001-315-335	Under Stainless Steel floor, sample point 31, Room 114C	<0 1
881-10022001-315-336	Under Stainless Steel floor, sample point 37, Room 245	<0 1
881-10022001-315-337	Under Stainless Steel floor, sample point 15, Room 245	<0 1
881-10022001-315-338	Under Stainless Steel floor, sample point 27, Room 114	<0 1
881-10022001-315-339	Under Stainless Steel floor, sample point 11, Room 245	<0 1
881-10022001-315-340	Under Stainless Steel floor, sample point 18 (A), Room265A	<0 1
881-10022001-315-341	Under Stainless Steel floor, sample point 18 (B), Room 265A	<0 1
881-10022001-315-342	Under Stainless Steel floor, sample point 24, Room 265	<0 1
881-10182001-213-101	Under plywood on top of stainless steel, Room 114A	<0 1
881-10182001-213-102	Under plywood on top of stainless steel, Room 114A	<0 1
881-10182001-213-103	Under plywood on top of stainless steel, Room 114A	<0 1
881-10182001-213-105	Under plywood, under stainless steel, Room 114A	<0 1
881-10182001-213-106	Under plywood on top of stainless steel, Room 114A	<0 1
881-10192001-315-107	Room 233 – Under stainless steel floor	<0 1
881-10032001-315-101	Room 156, floor of stairwell east of 121	<0 1
881-10032001-315-102	Room 110F, Top of raised floor in Break Room	<0 1
881-10032001-315-104	Room 103, Top of raised floor in Electrical Room	<0 1
881-10032001-315-105	119A, floor of Ladies Room by commode	<0 1
881-10032001-315-106	169, floor at start of ramp in front of Room 160	<0 1

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Sample Number	Sample Location	Result (ug/100 cm^2)
881-10032001-315-107	134, Floor on landing in stairwell by Room 137	<0 1
881-10032001-315-108	169, floor in front of freight elevator	<0 1
881-10032001-315-110	122D, floor adjacent to east wall	<0 1
881-10032001-315-112	100, floor of Loading Dock	<0 1
881-10032001-315-113	144, floor between doors	<0 1
881-10032001-315-114	110X, Top of raised floor in Electrical Room	<0 1
881-10032001-315-115	161, floor of concrete Up Ramp	<0 1
881-10032001-315-117	122A, floor of Electrical Transformer Room, NW corner	<0 1
881-10032001-315-118	102, Top of raised floor, NW corner	<0 1
881-10032001-315-119	110B, Top of raised computer floor	<0 1
881-10032001-315-120	137, floor in front of Be regulated area, SW corner	<0 1
881-10032001-315-121	Mezzanine Hall, floor in front of exit	<0 1
881-10032001-315-122	Mezzanine Hall, floor by west wall	<0 1
881-10032001-315-123	110B, top of raised floor in Electrical Room	<0 1
881-10032001-315-126	137D, floor in front of south sliding door	<0 1
881-10032001-315-127	110B, top of raised computer floor	<0 1
881-10032001-315-128	131B -- See Table 4 2 "Historical Beryllium Data Summary", p 11	<0 1
881-10032001-315-129	113A, tile floor under carpet	<0 1
881-10032001-315-130	169, middle of walkway on floor	<0 1
881-10042001-315-131	137D, floor against east wall	<0 1
881-10042001-315-132	147 concrete floor in front of door	<0 1
881-10042001-315-133	108, raised floor in computer room	<0 1
881-10042001-315-134	166, ceramic tile ledge, south wall	<0 1
881-10042001-315-135	143G, floor of Dark Room	<0 1
881-10042001-315-136	108, raised floor in computer room, NW corner	<0 1
881-10042001-315-137	143H, floor SW corner	<0 1
881-10042001-315-139	165, landing of stairwell, up from 165	<0 1
881-10042001-315-140	122B, floor of electrical transformer room	<0 1
881-10042001-315-141	146, concrete floor by east wall	<0 1
881-10042001-315-142	114, on linoleum flooring, SW area	<0 1
881-10042001-315-143	122D, floor of electrical transformer room	<0 1
881-10042001-315-144	110Y, top of electrical wire channel, north wall	<0 1
881-10042001-315-145	112A, floor of electrical room	<0 1
881-10042001-315-148	110B, raised floor of computer room, west wall	<0 1
881-10042001-315-150	110, raised floor of computer room	<0 1
881-10042001-315-151	108A, raised floor of computer room	<0 1
881-10042001-315-152	145, concrete floor, SE corner	<0 1
881-10042001-315-153	107, raised floor of computer room	<0 1
881-10042001-315-155	117, floor in doorway of Telephone Terminals	<0 1
881-10042001-315-156	122C, floor of electrical transformer room	<0 1
881-10042001-315-157	110C, raised floor of computer room at entrance	<0 1

Sample Number	Sample Location	Result (ug/100 cm²)
881-10042001-315-158	110B, raised floor of computer room, west area	<0 1
881-10042001-315-159	110D, raised floor of computer room, SW corner	<0 1
881-10042001-315-160	153, top of electrical channel, south wall	<0 1
881-10082001-315-201	Room 291, landing floor, south side	<0 1
881-10082001-315-202	Room 234A, floor in front of Room 292	<0 1
881-10082001-315-203	Room 295, floor on carpet by south wall	<0 1
881-10082001-315-204	238B, floor on carpet under desk	<0 1
881-10082001-315-205	288, on dock between steps	0 44
881-10082001-315-206	278D, entry to electrical room	<0 1
881-10082001-315-207	288, driveway to dock	<0 1
881-10082001-315-208	242, floor under Mezzanine	<0 1
881-10082001-315-209	206, floor in hall to Men's Locker Room	<0 1
881-10082001-315-210	232, on carpet in hall by west wall	<0 1
881-10082001-315-211	253, on carpet in classroom by west wall	<0 1
881-10082001-315-212	243, floor by door to HF Scrubber	<0 1
881-10082001-315-213	249A, on floor to east room	<0 1
881-10082001-315-214	259A, on carpet by east wall	<0 1
881-10082001-315-215	296A, floor by north wall	<0 1
881-10082001-315-217	266B, entrance to storage rooms	<0 1
881-10082001-315-218	277, on carpet by east wall	<0 1
881-10082001-315-219	293A, floor under stairwell	<0 1
881-10082001-315-220	Dock area north of 285, floor by south wall	<0 1
881-10082001-315-221	280, floor at top of staircase	<0 1
881-10082001-315-222	257F, on carpet SW corner	<0 1
881-10082001-315-224	295, floor on carpet by double entry doors	<0 1
881-10082001-315-225	277, on carpet inside entry to the left	<0 1
881-10082001-315-226	293, floor in hall by stairs	<0 1
881-10082001-315-227	149, floor of elevator	<0 1
881-10082001-315-228	257, floor of hallway	<0 1
881-10082001-315-229	201B, floor of Men's shower	<0 1
881-10082001-315-230	291, second step from bottom	<0 1
881-10082001-315-257	223, south wall on floor	<0 1
881-10092001-315-223	248A, on floor by wall	<0 1
881-10092001-315-231	214B, floor in SW corner	<0 1
881-10092001-315-232	297, floor by south access to Stack 2	<0 1
881-10092001-315-233	266C, floor by door to Room 266	<0 1
881-10092001-315-234	248A, floor by north wall	<0 1
881-10092001-315-235	232, on carpet by south wall & hall	<0 1
881-10092001-315-236	214B, floor near west wall	<0 1
881-10092001-315-237	242, floor in front of stairs to Mezzanine	<0 1
881-10092001-315-238	296D, floor of raised computer classroom	<0 1
881-10092001-315-239	288, driveway to dock, east side	<0 1
881-10092001-315-240	Mezzanine, floor by door to Room 294	<0 1
881-10092001-315-241	232, on carpet in middle of room	<0 1
881-10092001-315-242	296A, floor by east wall	<0 1
881-10092001-315-243	245, floor in hall by Room 296D	<0 1

Sample Number	Sample Location	Result ($\mu g/100\ cm^2$)
881-10092001-315-244	216, front of Women's Room in hall	<0 1
881-10092001-315-246	252A, on carpet in classroom by west wall	<0 1
881-10092001-315-247	296D, on carpet in classroom SW corner	<0 1
881-10092001-315-248	294, floor by door to Room 294A	<0 1
881-10092001-315-251	238A, floor on poly	<0 1
881-10092001-315-252	206, floor between double doors in hall to Men's Locker Room	<0 1
881-10092001-315-254	274, Middle of hallway outside Room 257C	<0 1
881-10092001-315-255	297, floor under stairs	<0 1
881-10092001-315-256	232, on carpet by west wall & chalk board	<0 1
881-10092001-315-258	242, floor under Mezzanine by south wall	<0 1
881-10092001-315-259	259, on carpet inside east door	<0 1
881-10092001-315-260	257B, on carpet by south wall	<0 1
881-10092001-315-261	214B, floor against north wall	<0 1
881-10092001-315-262	218, Women's Restroom	<0 1
881-10092001-315-263	230, floor inside doorway	<0 1
881-10092001-315-264	256, on carpet by entrance to Room 256A	<0 1
881-10092001-315-265	207, floor in Men's wash room	<0 1
881-10092001-315-266	250A, carpet in doorway	<0 1
881-10092001-315-268	297, floor by south access to Stack 2	<0 1
881-10092001-315-301	311B, concrete floor	<0 1
881-10092001-315-302	305, floor SW corner	<0 1
881-10092001-315-303	300C, on carpet	<0 1
881-10092001-315-304	300C, on carpet	<0 1
881-10092001-315-305	300D, on carpet	<0 1
881-10092001-315-306	16, floor by corner of T15 & T16	0 15
881-10092001-315-308	10, concrete by grating, pit with water	<0 1
881-10092001-315-309	311A, concrete floor	<0 1
881-10092001-315-310	311B, concrete floor	<0 1
881-10092001-315-311	15, floor of tunnel south end	<0 1
881-10092001-315-312	16, floor by Tunnel 19	<0 1
881-10092001-315-313	311B, concrete floor	<0 1
881-10092001-315-314	134, bottom of stairwell	<0 1
881-10102001-315-315	311B, concrete floor by south wall	<0 1
881-10092001-315-317	311A, concrete floor by east wall	<0 1
881-10092001-315-318	306, floor behind condensate line, south wall	<0 1
881-10092001-315-319	311A, concrete floor	<0 1
881-10092001-315-320	308, floor on raised step	<0 1
881-10092001-315-321	133, landing between basement & 1st floor	<0 1
881-10092001-315-322	309, on carpet in hallway	<0 1
881-10092001-315-323	311, floor next to stairwell	<0 1
881-10092001-315-324	311A, concrete floor	<0 1
881-10092001-315-325	10, concrete by grating, pit with water	<0 1

Sample Number	Sample Location	Result (ug/100cm^2)
881-10092001-315-326	307, floor by north wall	<0 1
881-10092001-315-327	309, floor in hallway	<0 1
881-10092001-315-328	307, floor by south wall	<0 1
881-10092001-315-329	300A, on carpet by east wall	<0 1
881-10092001-315-330	306, floor behind air handler, south wall	0 12
881-10092001-315-364	308, floor on raised step	<0 1
881-10092001-315-365	306, floor behind condensate line, south wall	<0 1
881-10092001-315-366	312A, on tile in middle of floor	<0 1
881-10092001-315-267	280A, floor in SW room	<0 1
881-10092001-315-368	133, landing between base and 1st floor	<0 1
881-10102001-315-331	311B, concrete floor	<0 1
881-10102001-315-332	134, bottom of stairwell	<0 1
881-10102001-315-333	367, on landing outside entrance	<0 1
881-10102001-315-334	10, concrete by grating, pit with water	<0 1
881-10102001-315-335	301, floor, middle of hallway, east end	<0 1
881-10102001-315-336	308, floor by north wall	<0 1
881-10102001-315-337	311B, concrete floor by west wall	<0 1
881-10102001-315-338	309E, on carpet in demolished classroom	<0 1
881-10102001-315-339	149, inside elevator on floor	<0 1
881-10102001-315-340	311A, concrete floor	<0 1
881-10102001-315-341	307, floor in middle of room	<0 1
881-10102001-315-342	311B, concrete floor by east wall	<0 1
881-10102001-315-343	311A, concrete floor by north wall	<0 1
881-10102001-315-344	305, floor behind condensate line, north wall	<0 1
881-10102001-315-345	306, floor in SE corner	<0 1
881-10102001-315-346	19, floor in middle	<0 1
881-10102001-315-347	300A, on carpet by south wall	<0 1
881-10102001-315-348	13, floor, west end of Tunnel 16	<0 1
881-10102001-315-349	17, floor of vault storage area	<0 1
881-10102001-315-350	303, floor in hall, west end	<0 1
881-10102001-315-351	15, floor of tunnel by door to Room 10	<0 1
881-10102001-315-352	309, in hallway by Room 309D	<0 1
881-10102001-315-353	311B, concrete floor	<0 1
881-10102001-315-354	311B, concrete floor	<0 1
881-10102001-315-357	306, floor by north wall	<0 1
881-10102001-315-358	311A, concrete floor	<0 1
881-10102001-315-359	319, on carpet by east wall	<0 1
881-10102001-315-360	311, ledge on floor by east exit door	<0 1
881-10082001-315-361	311B, concrete floor	<0 1
881-10102001-315-362	134, landing between basement & 1st floor	<0 1
881-10102001-315-363	31B, concrete floor by west wall	<0 1
887-10102001-315-101	Control Room floor by entry	<0 1
887-10102001-315-102	Control Room floor by entry	<0 1

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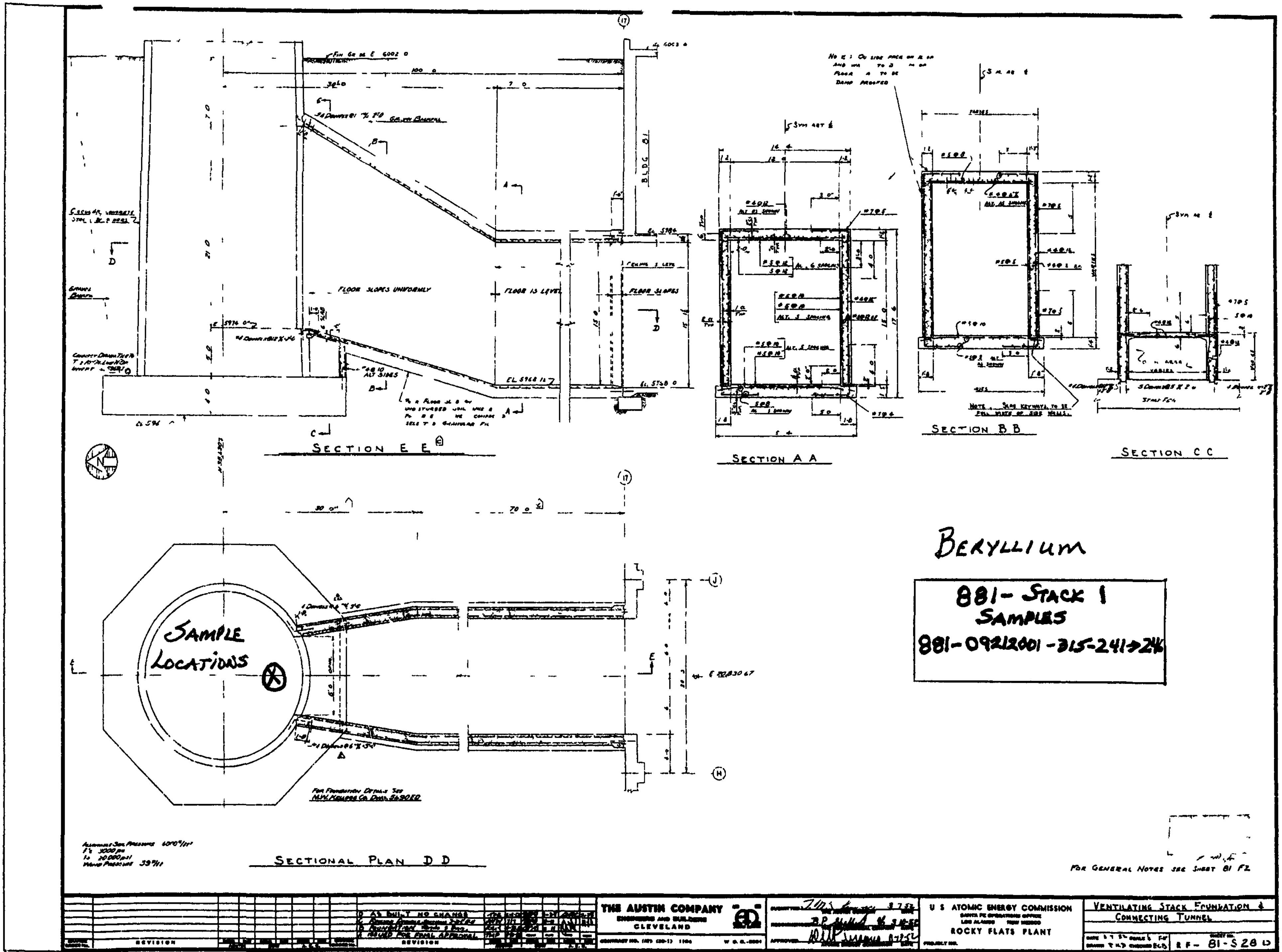
Sample Number	Sample Location	Result (ug/100 cm²)
887-10102001-315-103	NW corner, lower level, north room	<0 1
887-10102001-315-104	SE corner, lower level, south room	<0 1
887-10102001-315-105	Entry to south room on lower level floor	<0 1
887-10102001-315-106	Top of process waste pipe, SE corner of north room of lower level	<0 1
887-10102001-315-107	Lower level under process waste tank, north room	<0 1
887-10102001-315-108	Lower level floor at entry to north room	<0 1
887-10102001-315-109	Lower level floor in SW corner of south room	<0 1
887-10102001-315-110	Lower level floor in NW corner of south room	<0 1
887-10102001-315-111	Lower level floor in SW corner of north room	<0 1
887-10102001-315-112	Lower level top of process waste pipe by west wall, north room	<0 1
887-10102001-315-113	First landing down to lower level	<0 1


SECTION E E
SECTION A A
SECTION B B
SECTION C C
SECTIONAL PLAN D D
FLOOR SLOPES UNIFORMLY
FLOOR IS LEVEL
FLOOR SLOPES
BLDG 81
SAMPLE LOCATIONS
BERYLLIUM
881- STACK 1
SAMPLES
881-09212001-315-241→246
FOR GENERAL NOTES SEE SHEET 81 F2
THE AUSTIN COMPANY
CLEVELAND
U S ATOMIC ENERGY COMMISSION
ROCKY FLATS PLANT
VENTILATING STACK FOUNDATION & CONNECTING TUNNEL
81-S28
REVISION

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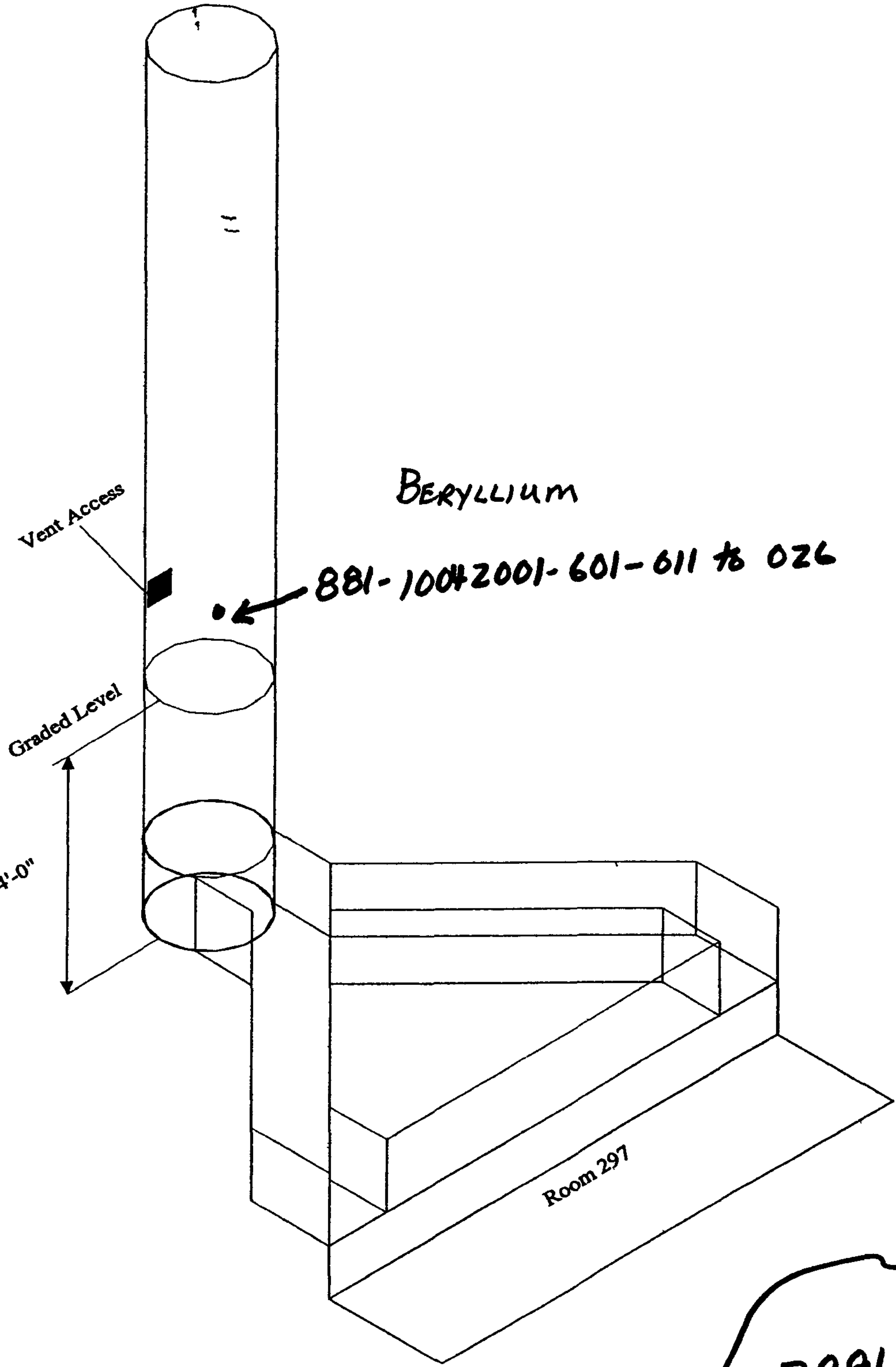
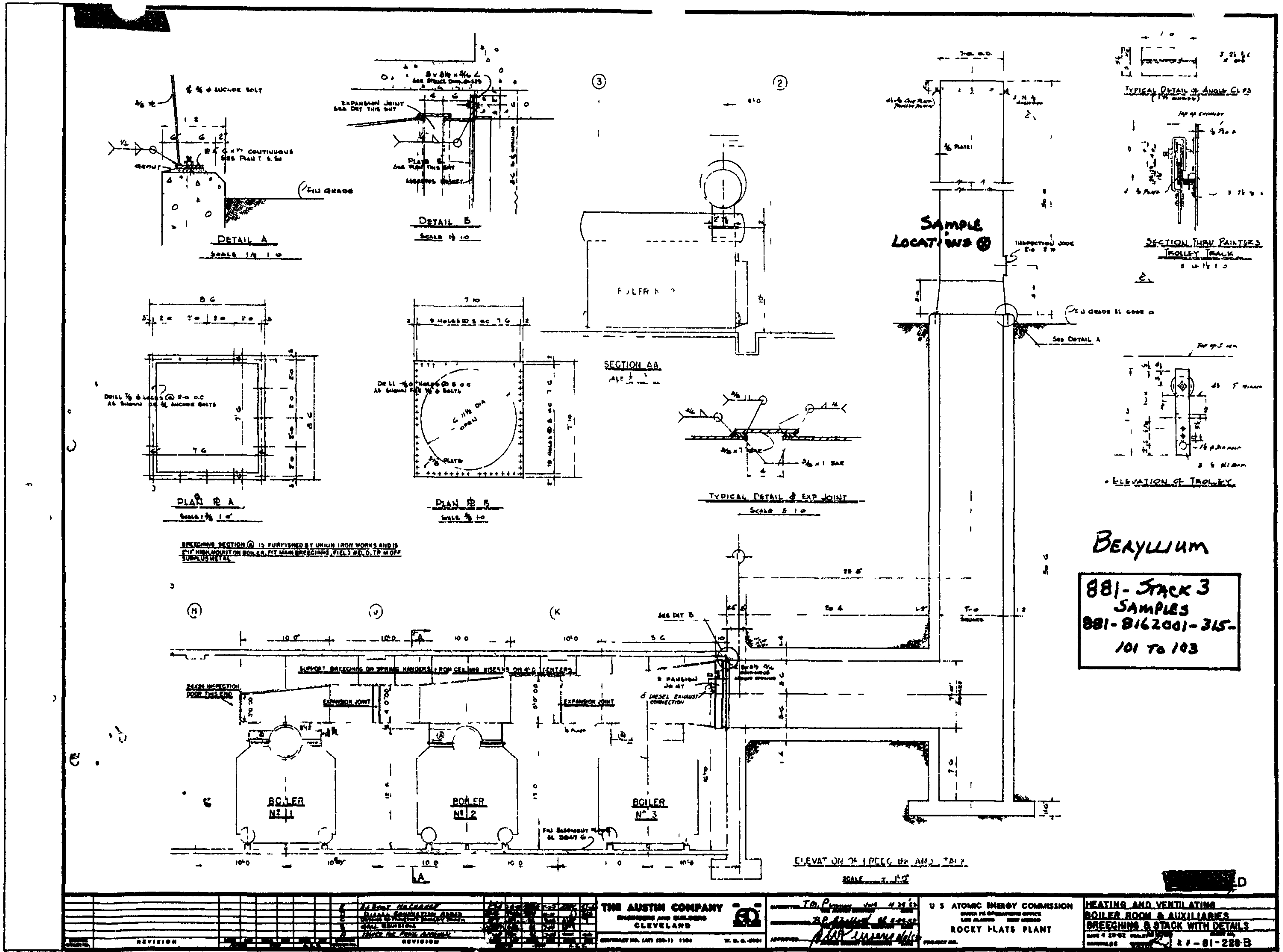
881 Northeast Stack (S-2)



B881 - STACK 2

277

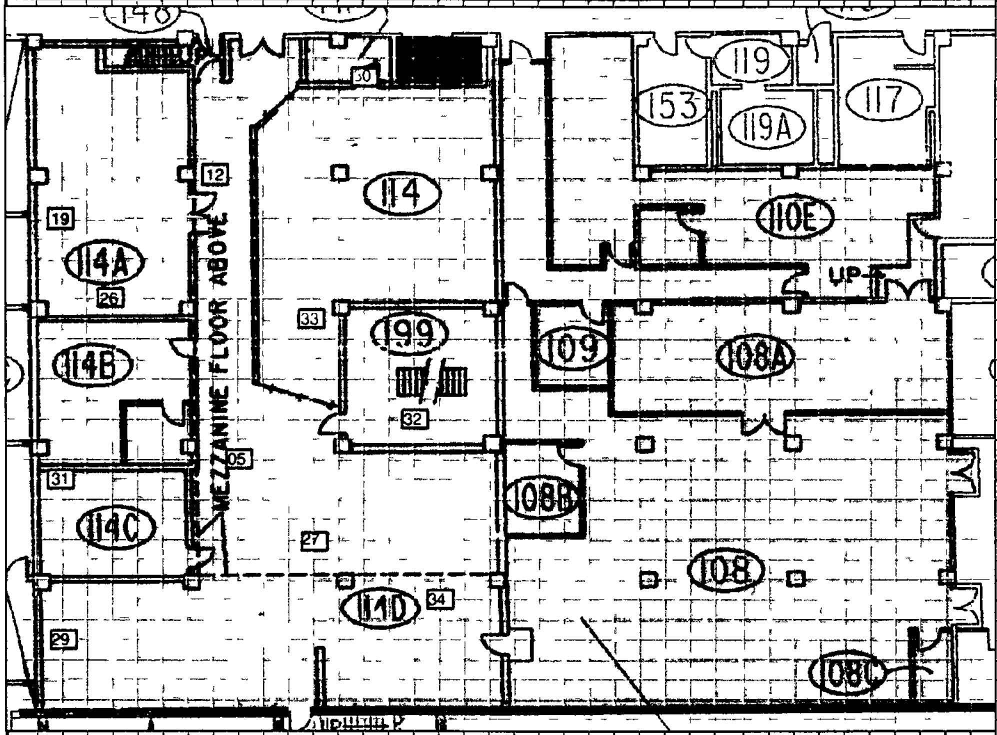


DETAIL A
SCALE 1½" = 1'-0"
DETAIL B
SECTION AA
PLAN @ A
PLAN @ B
TYPICAL DETAIL @ EXP JOINT
TYPICAL DETAIL OF ANGLE CLIPS
SECTION THRU RAILTSES TROLLEY TRACK
ELEVATION OF TROLLEY
SAMPLE LOCATIONS
BERYLLIUM
881- STACK 3
SAMPLES
881-8162001-315-
101 TO 103
BREECHING SECTION Ⓐ IS FURNISHED BY UNION IRON WORKS AND IS 2'-0" HIGH MOUNT ON BOILER, FIT MAIN BREECHING, FIELD WELD, TRIM OFF SURPLUS METAL
SUPPORT BREECHING ON SPRING HANGERS FROM CEILING INSERTS ON 4'-0" CENTERS
24X24 INSPECTION DOOR THIS END
EXPANSION JOINT
BOILER Nº 1
BOILER Nº 2
BOILER Nº 3
ELEVATION OF BREECHING AND STACK
THE AUSTIN COMPANY
ENGINEERS AND BUILDERS
CLEVELAND
U S ATOMIC ENERGY COMMISSION
ROCKY FLATS PLANT
HEATING AND VENTILATING
BOILER ROOM & AUXILIARIES
BREECHING & STACK WITH DETAILS
RF-81-228 B
REVISION

278

Survey Area	Stainless Steel	Survey Unit	N/A	Building/Structure	881
Survey Unit/Area Description	First Floor				

Building 881



N

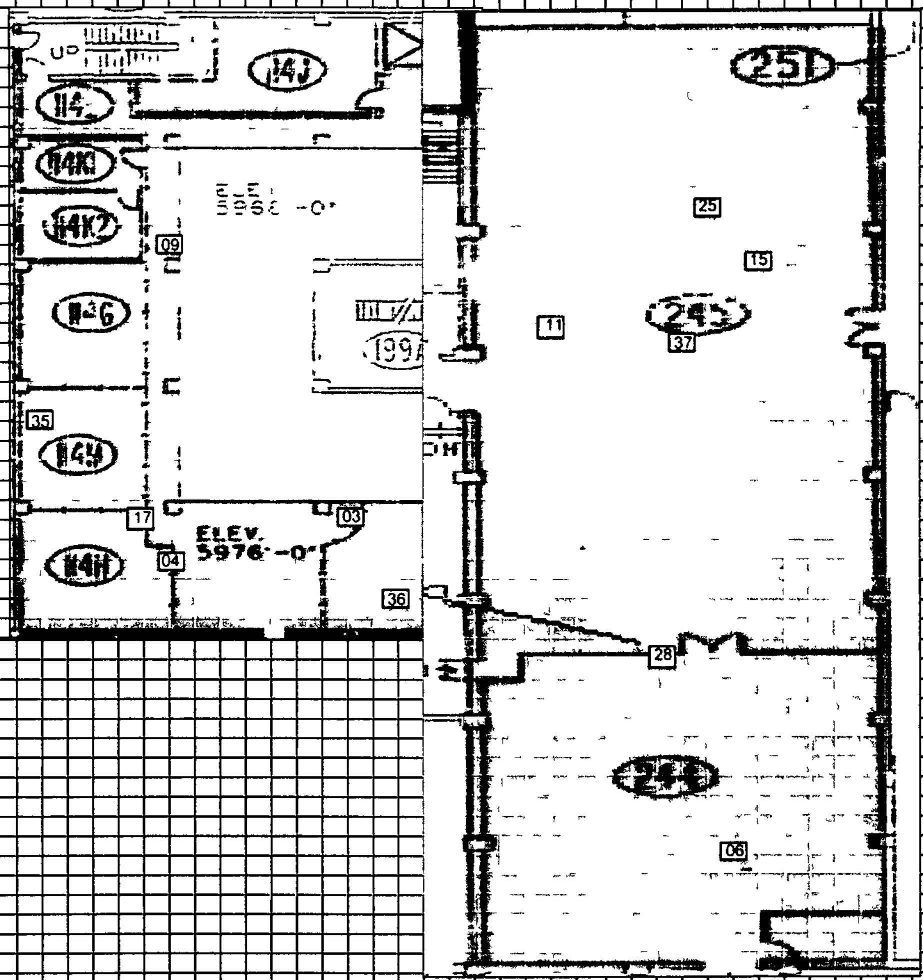
Scale 1 grid square = 1 sq meter

Sample Number Locations
1 30 Randomly Generated Locations
31 47 Biased Locations

279

Survey Area	Stainless Steel	Survey Unit	N/A	Building/Structure	881
Survey Unit/Area Description	Second floor/First Floor Mezzanine				

Building 881



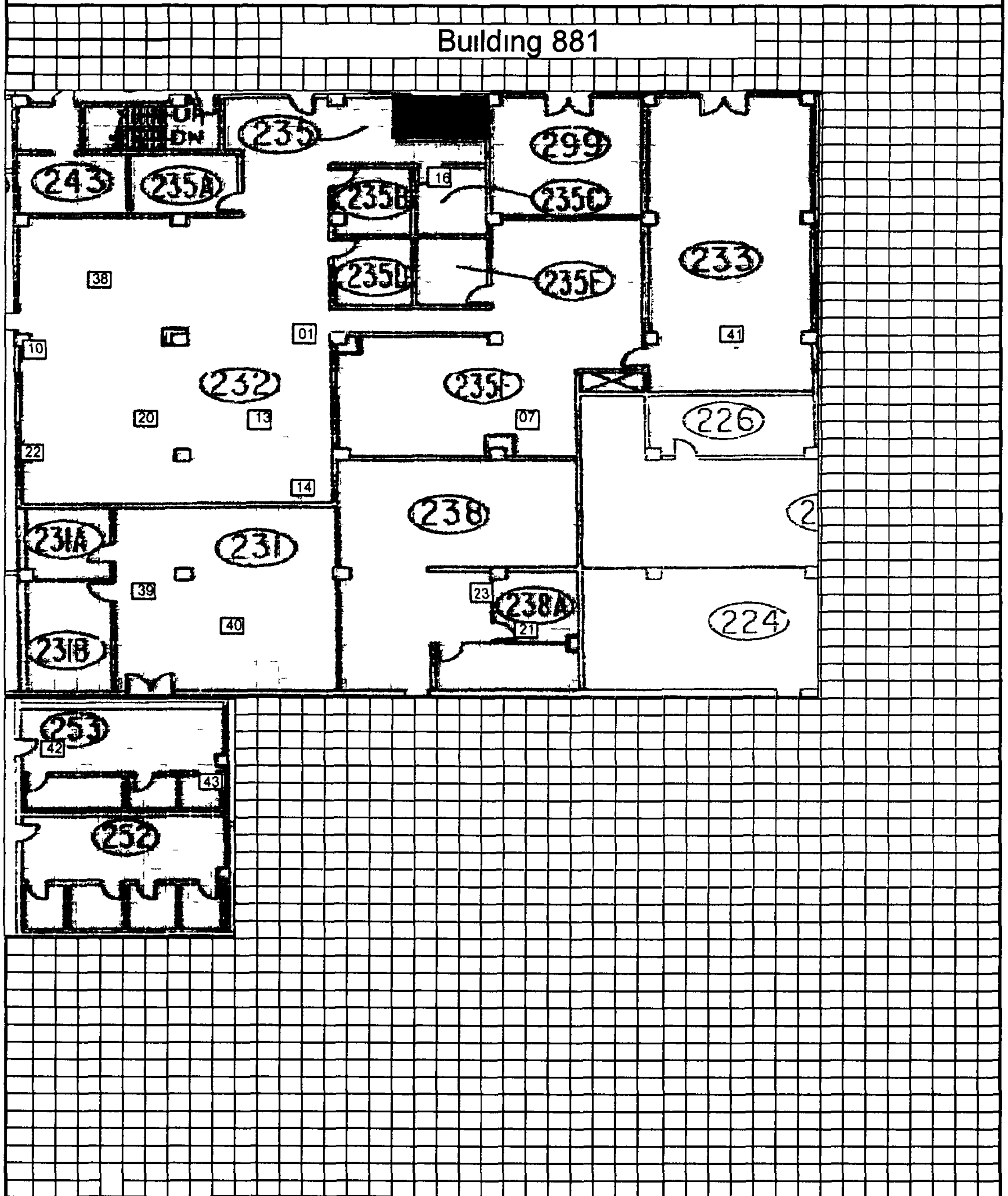
N

Scale 1 grid square = 1 sq meter

Sample Number Locations
1 30 Randomly Generated Locations
31 47 Biased Locations

280

Survey Area Stainless Steel	Survey Unit N/A	Building/Structure 881
Survey Unit/Area Description Second floor		

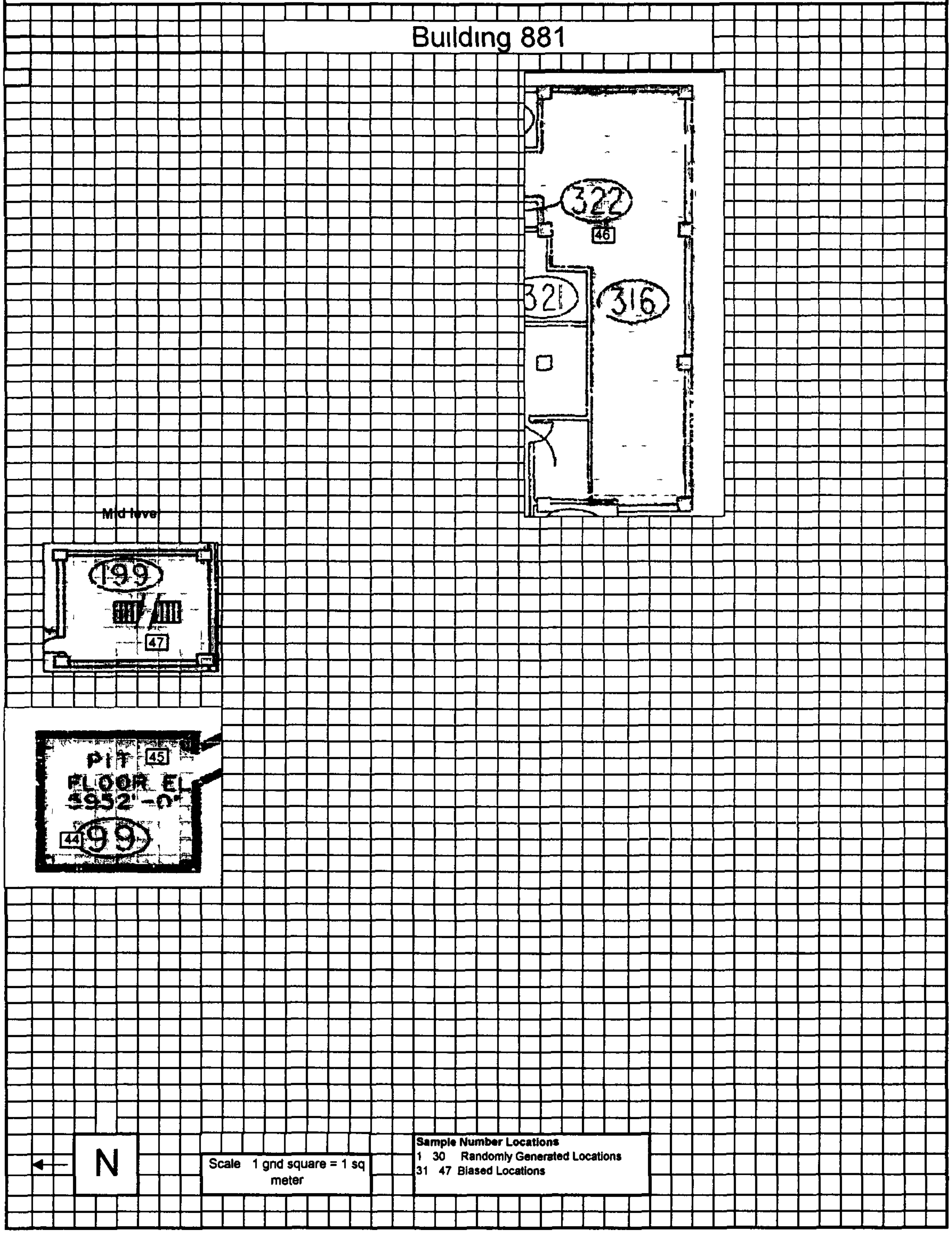


Scale 1 grid square = 1 sq meter

Sample Number Locations
1 30 Randomly Generated Locations
31 47 Biased Locations

281

Survey Area	Stainless Steel	Survey Unit	N/A	Building/Structure	881
Survey Unit/Area Description	Second Floor Mezzanine & Basement				

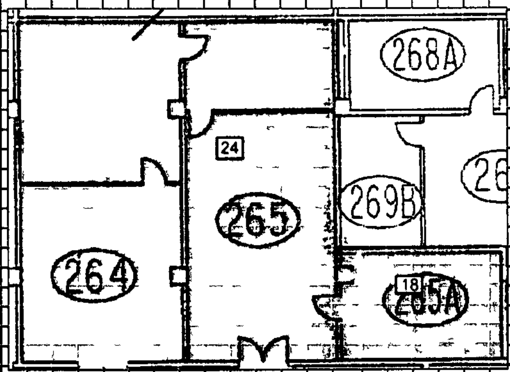


282

Survey Area	Stainless Steel	Survey Unit	N/A	Building/Structure	881
Survey Unit/Area Description	Second Floor				

X

Building 881



N

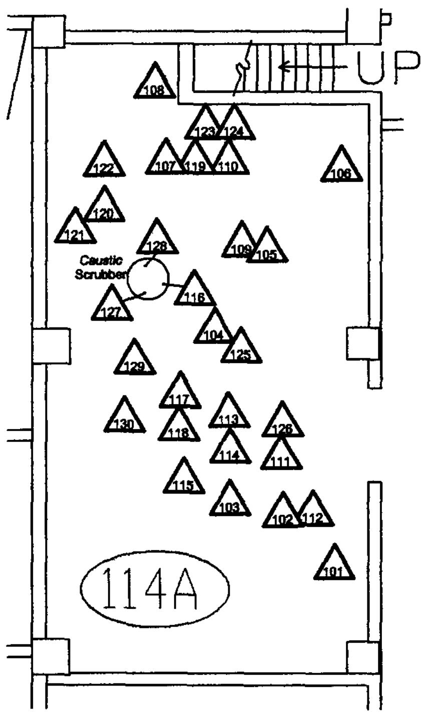
Scale 1 grid square = 1 sq meter

Sample Number Locations
1 30 Randomly Generated Locations
31 47 Biased Locations

283

BERYLLIUM SAMPLE MAP FOR ROOM 114A

Building 881



Samples numbered
881-09202001-601-101
through
881-09202001-601-130

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30

0 METERS 10

1 inch = 12 feet 1 grid sq = 3 ft. sq.

U.S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:
[redacted]

MAP ID: fy2002/02-0091/B881-R114November 1, 2001

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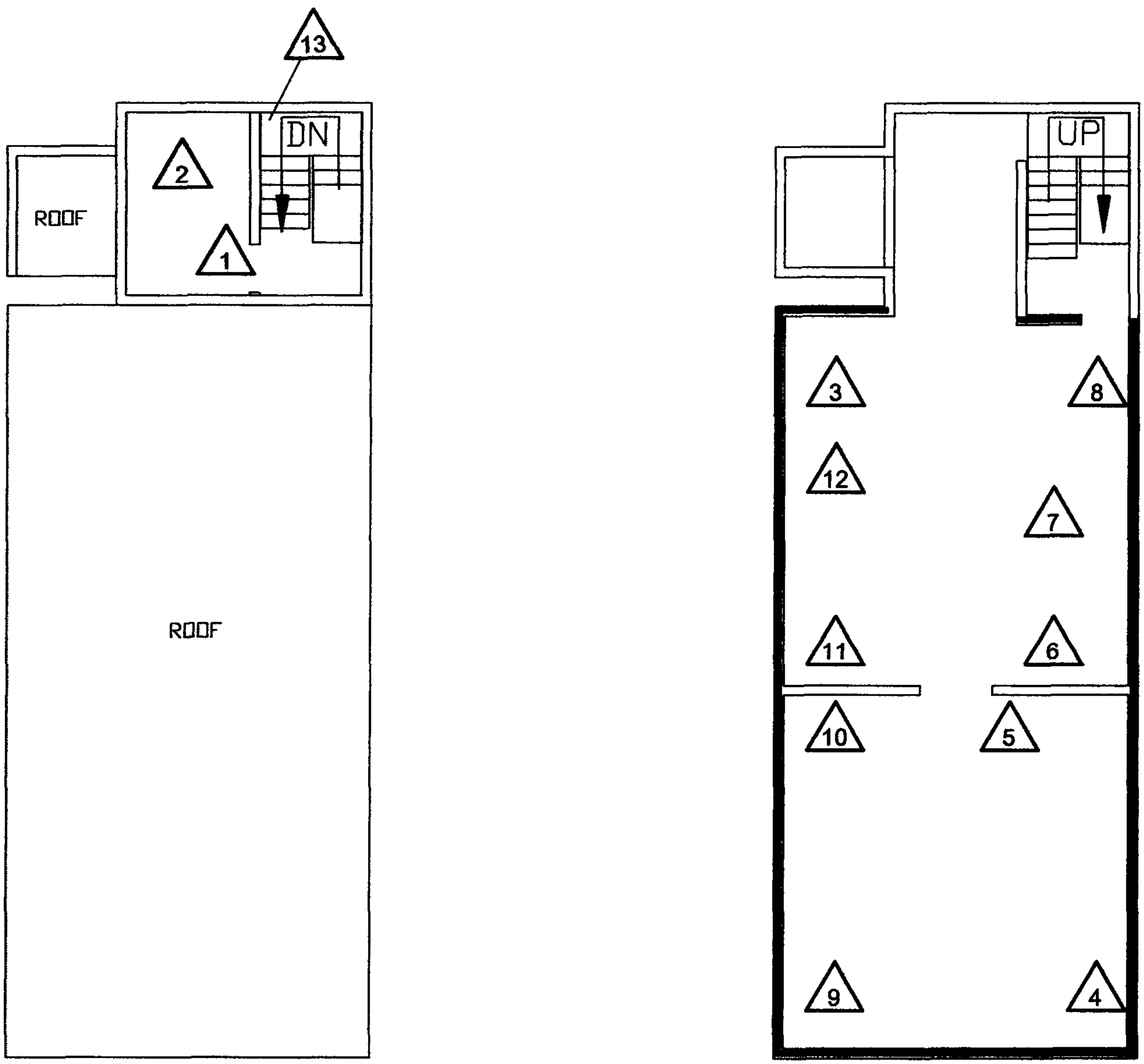
BERYLLIUM SAMPLE MAP FOR B887

Building 887



BLDG 887 FLOOR PLAN

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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N

- Open/Inaccessible Area
- Area in Another Survey Unit

0 FEET 30

0 METERS 10

1 inch = 12 feet 1 grid sq = 3 ft. sq.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

DynCorp
THE ART OF TECHNOLOGY

MAP ID. fy2002/02-0001/B887-BE November 1, 2001

000-A-001

PAGE 1 OF 1

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Table F.3 881 CLUSTER RCRA/CERCLA CONSTITUENTS DATA SUMMARY

Sample Location / Media	Sample Number; Analysis	Result (*ug/L or ug/kg*)
Room 160/core sample	02S0001-001 001	VOAs and SVOAs less than regulatory limits
Room 143A/core sample	02S0001-002 001/02S0001-003 001	Ethylbenzene – 5 1 and 1 9 ug/kg Tetrachloroethene – 4 7 and 2 7 ug/kg Toluene – 3 6 and 3 1 ug/kg Xylene – 2 6 and 9 7 ug/kg
Room 168/core sample	02S0001-004 001	VOAs and SVOAs less than regulatory limits
Room 12/core sample	02S0001-005 001/02S0001-006 001	VOAs and SVOAs less than regulatory limits
Room 10B/core sample	02S0001-007 001	VOAs and SVOAs less than regulatory limits
Room 113/core sample	02S0001-008 001	Xylene 99 ug/kg
Elevator pit - room 10/aqueous	02S0002-001 003	VOAs and SVOAs less than regulatory limits
Elevator pit – room 159/sediment	02S0002-002 003	VOAs and SVOAs less than regulatory limits
Elevator pit – room 149/sediment	02S0002-003 003/02S0002-004 003	VOAs and SVOAs less than regulatory limits

F.4 881 CLUSTER TOTAL METALS DATA SUMMARY

Sample Location / Media	Sample Number: Analysis	Result (*ug/L*)
Room 160/core sample	02S0001-001 001	TCLP Metals less than regulatory limits
Room 143A/core sample	02S0001-002 001/02S0001-003 001	TCLP Metals less than regulatory limits
Room 168/core sample	02S0001-004 001	TCLP Metals less than regulatory limits
Room 12/core sample	02S0001-005 001/02S0001-006 001	TCLP Metals less than regulatory limits
Room 10B/core sample	02S0001-007 001	TCLP Metals less than regulatory limits
Room 113/core sample	02S0001-008 001	TCLP Metals less than regulatory limits

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Elevator pit - room 10/aqueous	02S0002-001 003	Total Metals less than regulatory limits
Elevator pit – room 159/sediment	02S0002-002 003	Total Metals less than regulatory limits
Elevator pit – room 149/sediment	02S0002-003 003/02S0002-004 003	Total Metals less than regulatory limits

RCRA Metals

Analyte	Regulatory limit (mg/L)
Arsenic (D004)	5 0
Barium (D005)	100 0
Cadmium (D006)	1 0
Chromium (D007)	5 0
Lead (D008)	5 0
Mercury (D009)	0 2
Selenium (D010)	1 0
Silver (D011)	5 0

Volatile Organics Analyzed

Analyte	Regulatory limit (mg/L)
Vinyl Chloride (D043)	0 2
1,1-Dichloroethene (D029)	0 7
Chloroform (D022)	6 0
1,2- Dichloroethane (D028)	0 5
2-Butanone (D035)	200 0
Carbon Tetrachloride (D019)	0 5
Trichloroethene (D040)	0 5
Benzene (D018)	0 5
Tetrachlorobenzene (D039)	0 7
Chlorobenzene (D021)	100 0
1,4- Dichlorobenzene (D027)	7 5

The VOAs listed in the above table have values from 40CFR261 24, Table 1 These are the limits for waste that will be assigned EPA codes as a characteristic waste Additional VOAs were analyzed to identify the presence of solvents to determine if EPA codes apply for listed waste, 40CFR261 31 There is no minimum value below which the codes for listed waste would not apply

Table F.5 881 CLUSTER PCB DATA SUMMARY

Sample Location / Media	Sample Number: Analysis	Result (ug/L)
Room 160/core sample	02S0001-001 001	PCBs less than regulatory limit
Room 143A/core sample	02S0001-002 001/02S0001-003 001	PCBs less than regulatory limit
Room 168/core sample	02S0001-004 001	PCBs less than regulatory limit
Room 12/core sample	02S0001-005 001/02S0001-006 001	PCBs less than regulatory limit
Room 10B/core sample	02S0001-007 001	PCBs less than regulatory limit
Room 113/core sample	02S0001-008 001	PCBs less than regulatory limit
Elevator pit - room 10/aqueous	02S0002-001 002	PCBs less than regulatory limit
Elevator pit – room 159/sediment	02S0002-002 002	PCBs less than regulatory limit
Elevator pit – room 149/sediment	02S0002-003 002/02S0002-004 002	PCBs less than regulatory limit

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ATTACHMENT G

Decommissioning Waste Types And Volume Estimates

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Waste Volume Estimates and Material Types							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste
881	690,100	500	4,550	0	1,670	61,922 Non-Friable 13,608 Friable	Roofing-Buildup 11,320 cu ft
881F	300	0	3,500	0	0	2,160² Non-Friable	Roofing-Buildup 2,400 cu ft
887	1,820	0	10	0	0	100²	Roofing -Buildup 360 cu ft
881S1	15,570	0	0	0	0	0	0
881S2	950	0	250	0	0	0	0
881S3	490	0	180	0	0	0	0

(1) 881 Cluster Type 2 facilities may contain PCB paints, PCB-containing equipment, and/or PCB ballasts Painted demolition debris will either be disposed of as PCB Bulk Product Waste, or, if meeting the release criteria for all other constituents as noted in the Concrete RSOP, the concrete will be used as backfill onsite

(2) Friable building materials include, but are not limited to, thermal systems insulation, surfacing materials (such as spray-on fireproofing), drop ceiling tiles, and sheet vinyl linoleum Non-friable building materials include, but are not limited to, floor tile, mastic adhesives, corrugated transite wallboard, and tar-impregnated roofing

(3) All waste types are assumed to be LLW and Be waste, unless decontaminated during in-process activities

(4) Rooms 113 and 143A slabs each have approximately two cubic feet of hazardous waste concrete

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ATTACHMENT H

Data Quality Assessment (DQA) Detail

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DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium, metals, VOCs, SVOCs and PCBs)

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed, the radiological survey assessment is provided in Table H-1, beryllium in H-2, metals in H-3, VOCs in H-4, SVOCs in H-5 and PCBs in H-6 A data completeness summary for all results is given in Table H-7

All relevant Quality records supporting this report are maintained in a Project File The Regulators will submit this report to the CERCLA Administrative Record for permanent storage within 30 days of approval Radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Areas/Units Chemical data are organized by RIN (Report Identification Number) and are traceable to sample numbers/sample locations

Beta/gamma survey designs were not implemented for the 881 Cluster exterior PDS surveys based on the conservatism of transuranic limits used as DCGLs in the unrestricted release decision process Stated differently, based on the well-established suite of actinides historically used at the RFETS, these actinides would emit alpha radiation in excess of the applicable transuranic DCGLs before other DCGLs would be exceeded for their respective Uranium species Technical Basis Document 00162, Rev 0, *Technical Justification for Types of Surveys Performed During Reconnaissance Level Characterization Surveys and Pre-Demolition Surveys in RISS Facilities,* corroborates the use of this conservative approach

Consistent with EPA's G-4 DQO process, the radiological survey designs – for those survey units performed per PDS requirements - were optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired

SUMMARY

In summary, the data presented in this report have been verified and validated relative to quality requirements and the project decisions as stated in the original DQOs All data are usable based on the qualifications stated herein and are considered satisfactory without qualification

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Table H-1 V&V of Radiological Surveys

V&V CRITERIA, RADIOLGICAL SURVEYS			K-H RSP 16 00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS					
	Parameters		Measure	frequency	COMMENTS
ACCURACY	initial calibrations		90%<x<110%	≥1	multi-point calibration through the measurement range encountered in the field, programmatic records
	daily source checks		80%<x<120%	≥1/day	
	local area background	Field	typically < 10 dpm	≥1/day	all local area backgrounds were within expected ranges (i e , no elevated anomalies)
PRECISION	field duplicate measurements for TSA		≥5% of real survey points	≥10% of reals	
REPRESENTATIVENESS	MARSSIM gridding methodology (Survey Units 881-B-001 thru 881-B-004)		statistical and biased	NA	random w/ statistical confidence
	Survey Maps			NA	random and biased measurement locations controlled/mapped to ±1m
	Controlling Documents (Characterization Pkg, RSPs)		qualitative	NA	See Attachment C, original Characterization Package (planning document) for field/sampling procedures, thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	units of measure		dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual surveys usable results vs unusable		>95% >95%	NA	see Table H-7 for details, elevated alpha readings not due to DOE-added materials based on negative results from gamma spectroscopy
SENSITIVITY	detection limits		TSA ≤50 dpm/100cm^2 RA ≤10 dpm/100cm^2	all measures	MDAs ≤ ½ $DCGL_w$ per MARSSIM guidelines Measure criteria applies to Survey Units 881-B-001 thru 881-B-004 only

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Table H-2 V&V of Chemical Results-Beryllium

V&V CRITERIA, CHEMICAL ANALYSES			DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD. OSHA ID-125G		LAB --->	DataChem,Ut Johns Manville, Co	
QUALITY REQUIREMENTS			RIN --->	Various, See Table H-7 Below	
			Measure	frequency	COMMENTS
ACCURACY	calibrations	Initial	linear calibration	≥1	no qualifications significant enough to change project decision, i e , classification of Type 2 areas confirmed
		Continuing	80%<%R<120%	≥1	
	LCS/MS		80%<%R<120%	≥1	
	blanks	lab & field	<MDL	≥1	
	interference check std (ICP)			NA	
PRECISION	LCSD		80%<%R<120% (RPD<20%)	≥1	
	field duplicate		all results < RL	≥1	
REPRESENTATIVENESS	COC		Qualitative	NA	
	hold times/preservation		Qualitative	NA	
	maps				
	Controlling Documents (Plans, Procedures, etc)		Qualitative	NA	
COMPARABILITY	measurement units		$ug/100cm^2$	NA	
COMPLETENESS	Plan vs Actual samples usable results vs unusable		>95% >95%	NA	
SENSITIVITY	detection limits		MDL of 0 012 $ug/100cm^2$	all measures	

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Table H-3 V&V of Chemical Results-Metals

V&V CRITERIA, CHEMICAL ANALYSES			DATA PACKAGE		
Metals (total)	METHOD: SW6010/6020		LAB --->	Severn-Trent, Denver, Co	
			RIN --->	RIN02S0001 RIN02S0002	
QUALITY REQUIREMENT					COMMENTS
			Measure	frequency	no qualifications significant enough to change project decision, i e , classification of Type 2 areas confirmed; TCLP results well below associated action levels
ACCURACY	calibrations	Initial	linear calibration	≥1/batch	
		Continuing	80%<%R<120%	≥1/batch	
	LCS		80%<%R<120%	≥1/batch	
	MS		75%<%R<125%	≥1/batch	
	blanks	Lab	mg/kg	≥1/batch	
	serial dilutions		%D<10%	≥1/batch	
	interference check std (ICP)		80%<%R<120%	bracket batch	
PRECISION	MSD		RPD<30%	≥1/batch	
	field duplicate		all results < RL	≥1/batch	
REPRESENTATIVENESS	COC		Qualitative	NA	
	hold times/preservation		≤180 days	NA	
	Controlling Documents (Plans, Procedures, Maps, etc)		Qualitative	NA	
COMPARABILITY			mg/kg	NA	
COMPLETENESS	Plan vs Actual samples usable results vs unusable		>95% >95%	NA	
SENSITIVITY	detection limits		Various	all analytes	

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Table H-4 V&V of Chemical Results – Volatile Organic Compounds (VOCs)

V&V CRITERIA, CHEMICAL ANALYSES			DATA PACKAGE		
VOCs	METHOD SW8260		LAB ---->	Severn-Trent, Denver, Co	
			RIN ---->	RIN02S0001 RIN02S0002	
QUALITY REQUIREMENT					COMMENTS
			Measure	frequency	no qualifications significant enough to change project decision, i e , classification of Type 2 areas confirmed, F-listed waste confirmed for limited, small volumes of concrete
ACCURACY	calibrations	Initial	± 40%D in Response Factor	≥1/batch	
		Continuing	80%<%R<120%	≥1/batch	
	LCS		80%<%R<120%	≥1/batch	
	MS		75%<%R<125%	≥1 batch	
	blanks	Lab	ug/kg	≥1/batch	
	internal standards		retention times and area factors	≥1/batch	
	surrogate		%R (variable)	≥1/batch	
PRECISION	MSD		RPD<30%	≥1/batch	
	field duplicate		all results < RL	≥1/batch	
REPRESENTATIVENESS	COC		Qualitative	NA	
	hold times/preservation		≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc)		Qualitative	NA	
COMPARABILITY			ug/kg	NA	
COMPLETENESS	Plan vs Actual samples usable results vs unusable		>95% >95%	NA	
SENSITIVITY	detection limits		Various	all analytes	

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Table H-5 V&V of Chemical Results – Volatile Organic Compounds (SVOCs)

V&V CRITERIA, CHEMICAL ANALYSES			DATA PACKAGE		
SVOCs	METHOD SW8270		LAB ---->	Severn-Trent, Denver, Co	
			RIN ---->	RIN02S0001 RIN02S0002	
QUALITY REQUIREMENT					COMMENTS
			Measure	frequency	no qualifications significant enough to change project decision, i e , classification of Type 2 areas confirmed
ACCURACY	calibrations	Initial	± 40%D in Response Factor	≥1/batch	
		Continuing	80%<%R<120%	≥1/batch	
	LCS		80%<%R<120%	≥1/batch	
	MS		75%<%R<125%	≥1 batch	
	blanks	Lab	ug/kg	≥1/batch	
	internal standards		retention times and area factors	≥1/batch	
	surrogate		%R (variable)	≥1/batch	
PRECISION	MSD		RPD<30%	≥1/batch	
	field duplicate		all results < RL	≥1/batch	
REPRESENTATIVENESS	COC		Qualitative	NA	
	hold times/preservation		≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc)		Qualitative	NA	
COMPARABILITY			ug/kg	NA	
COMPLETENESS	Plan vs Actual samples usable results vs unusable		>95% >95%	NA	
SENSITIVITY	detection limits		Various	all analytes	

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Table H-6 V&V of Chemical Results – PCBs

V&V CRITERIA, CHEMICAL ANALYSES			DATA PACKAGE		
PCBs	METHOD. SW8082		LAB ---->	Severn-Trent, Denver, Co	
			RIN ---->	RIN02S0001 RIN02S0002	
QUALITY REQUIREMENT					COMMENTS
			Measure	frequency	
ACCURACY	calibrations	Initial	r^2>0 99	≥1/batch	no qualifications significant enough to change project decision, i e , classification of Type 2 areas confirmed, all PCB concentrations well below associated action levels
		Continuing	80%<%R<120%	≥1/batch	
	LCS		80%<%R<120%	≥1/batch	
	MS		75%<%R<125%	≥1/batch	
	blanks	Lab	<MDL	≥1/batch	
PRECISION	MSD		75%<%R<125%	≥1/batch	
	field duplicate		all results < RL	≥1/batch	
REPRESENTATIVENESS	COC		Qualitative	NA	
	hold times/preservation		≤30 days extract ≤45 days analysis	NA	
	Controlling Documents (Plans, Procedures, maps, etc)		Qualitative	NA	
COMPARABILITY			ug/kg	NA	
COMPLETENESS	Plan vs Actual samples usable results vs unusable		>95% >95%	NA	
SENSITIVITY	detection limits		Various	all analytes	

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Table H-7 Data Completeness Summary for the 881 Cluster.

ANALYTE	# Samples Planned (incl. Media; Real & QC Samples)	# Taken (Real & QC Samples)[B]	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Beryllium (swipes)- **Survey Area 000-A-001**		(real, blanks, QC)		OSHA-125G Quantity of random vs biased not differentiated in planning document
• B881 1st floor	12 random and biased139 random and biased	12 real, 5 QC	Type 2 classification confirmed by contamination	RIN #02D0102 3 survey points above unrestricted release level ($2ug/100cm^2$)
• B881 2nd floor, mezzanine, basement, B887	3 random and biased	139 real, , 21 QC	Same as above	RIN #02D0121 1 survey point above unrestricted release level ($2ug/100cm^2$)
• B881-Stack 3	7 random and biased	3 real, 10 QC	No contamination found	RIN #01D1372
• B881-Stacks 1	34 random and biased	7 real, 5 QC	No contamination found	RIN #01D1508
• B881 1st floor	42 random and biased	34 real, 15 QC	No contamination found	RIN #01D1497
• B881 SS floor	20 random and biased	42 real, 15 QC	No contamination found	RIN #02D0072
• B881 Stack 2	78 random and biased	16 real, 4 blanks, 10 QC	No contamination found	RIN #02D0088
• B881 1st floor and sumps, pits		78 real, 20 QC		RIN #02D0202 1 survey point above investigative level, all results below the unrestricted release level ($2ug/100cm^2$)
Metals (total)		(no QC)	No metals exceeded the regulatory limits, no metals contamination	
• B881 1st fl rm 160	dependent on walkdown	1 (solid)		RIN 02S0001
• B881 1st fl rm 143A		1 (solid) 1 duplicate		
• B881 1st fl Rm 168		1 (solid)		
• B881 Bsmt Tunnel		1 (solid) 1 duplicate		

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Table H-7 Data Completeness Summary for the 881 Cluster.

ANALYTE	# Samples Planned (incl. Media, Real & QC Samples)	# Taken (Real & QC Samples)[B]	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
• B881 Bsmt Rm 10B		1 (solid)1 (solid)		
• B881 1st fl Rm 113		1 (aqueous)		
• B881 1st fl Elevator Pit		1 (sediment)		RIN 02S0002
• B881 1st fl Elevator Pit Rm 159		1 (sediment) 1 duplicate		
• B881 1st fl Elevator Pit Rm 149				
VOCs	dependent on walkdown	(no QC)	F-Listed wastes established based on detections of selected organics	RIN 02S0001
• B881 1st fl rm 160		1 (solid)		
• B881 1st fl rm 143A		1 (solid) 1 duplicate		
• B881 1st fl Rm 168		1 (solid)		
• B881 Bsmt Tunnel		1 (solid) 1 duplicate		
• B881 Bsmt Rm 10B		1 (solid)		
• B881 1st fl Rm 113		1 (solid)		RIN 02S0002
• B881 1st fl Elevator Pit		1 (aqueous)		
• B881 1st fl Elevator Pit Rm 159		1 (sediment)		
• B881 1st fl Elevator Pit Rm 149		1 (sediment) 1 duplicate		

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Table H-7 Data Completeness Summary for the 881 Cluster.

ANALYTE	# Samples Planned (incl Media; Real & QC Samples)	# Taken (Real & QC Samples)[B]	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
SVOCs		(no QC)	No contamination due to SVOCs	
• B881 1st fl rm 160	Dependant on walkdown	1 (solid)		RIN 02S0001
• B881 1st fl rm 143A		1 (solid) 1 duplicate		
• B881 1st fl Rm 168		1 (solid)		
• B881 Bsmt Tunnel		1 (solid) 1 duplicate		
• B881 Bsmt Rm 10B		1 (solid)		
• B881 1st fl Rm 113		1 (solid)		
• B881 1st fl Elevator Pit		1 (aqueous)		RIN 02S0002
• B881 1st fl Elevator Pit Rm 159		1 (sediment)		
• B881 1st fl Elevator Pit Rm 149		1 (sediment) 1 duplicate		

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Table H-7 Data Completeness Summary for the 881 Cluster.

ANALYTE	# Samples Planned (incl. Media; Real & QC Samples)	# Taken (Real & QC Samples)[B]	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
PCBs	Total (9 reals, 3 duplicates)		No contamination due to PCBs	
• B881 1st fl rm 160		1 (sediment)		RIN 02S0001
• B881 1st fl rm 143A		1 (sediment) 1 duplicate		
• B881 1st fl Rm 168		1 (sediment)		
• B881 Bsmt Tunnel		1 (sediment) 1 duplicate		
• B881 Bsmt Rm 10B		1 (sediment)		
• B881 1st fl Rm 113		1 (sediment)		
• B881 1st fl Elevator Pit		1 (sediment)		RIN 02S0002
• B881 1st fl Elevator Pit Rm 159		1 (sediment)		
• B881 1st fl Elevator Pit Rm 149		1 (sediment) 1 duplicate		

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Table H-7 Data Completeness Summary For The 881 Cluster

ANALYTE	# Samples Planned (incl. Media, Real & QC Samples)	# Taken (Real & QC Samples)[B]	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological Survey – **Building 881 exterior**				
Survey Area B				
Survey Unit 881-B-001	155 α TSA & 155 α Smears 8 QC	Same	No contamination found	Survey Point #64 was taken in a known contamination area and resulted in > Std Deviation Will be remediated and resurveyed during PDS interior phase Other elevated sample readings were verified as U by gamma spectroscopy and did not exceed 5000 dpm/100cm^2 DCGL limits
Survey Unit 881-B-002	26 α TSA, 9 biased, 2 QC 26 α Smears, 9 biased	Same	No contamination found	
Survey Unit 881-B-003	15 α TSA, 10 biased, 2 QC 15 α Smears, 10 biased	Same	No contamination found	
Survey Unit 881-B-004	15 α TSA, 10 biased, 2 QC 15 α Smears, 10 biased	Same	No contamination found	Re-investigation of survey points 16, 17, 18 and 19 showed no Am 241 based on gamma spectroscopy of coupons, therefore, assigned U limit of 5000 dpm/100cm^2 and meets unrestricted release guidelines
Building 881 (interior)	(Alpha and Beta Surveys)			
• Survey Area G Stacks 1, 2 and 3 (interior)	30 α, β TSA & α, β Smears uniformly distributed	Same	No contamination found, all values below unrestricted release levels	No results above $DCGL_w$ or $DCGL_{EMC}$ action level 20 dpm/100cm^2 removable, 100 dpm/100cm^2 total average, and 300 dpm/100cm^2 total maximum
• Survey Area H Trenches, pits, sumps and elevator shafts	32 α, β TSA & α, β Smears uniformly distributed	Same	Type 2 Classification confirmed	Same as above
• Survey Area I SS Floors	28 α, β TSA & α, β Smears 17 biased	Same	Type 2 Classification confirmed	

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Table H-7 Data Completeness Summary For The 881 Cluster

ANALYTE	# Samples Planned (incl Media; Real & QC Samples)	# Taken (Real & QC Samples)[B]	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
• Survey Area J 1st Floor	225 α, β TSA & α, β Smears uniformly distributed	Same	No contamination found	
• Survey Area K 2nd Floor	325 α, β TSA & α, β Smears uniformly distributed	Same	No contamination found	
• Survey Area L Consent Order Rooms	115 α, β TSA & α, β Smears uniformly distributed	Same	Type 2 Classification confirmed	
• Survey Area M B887 Interior	70 α, β TSA & α, β Smears uniformly distributed	Same	Type 2 Classification confirmed	

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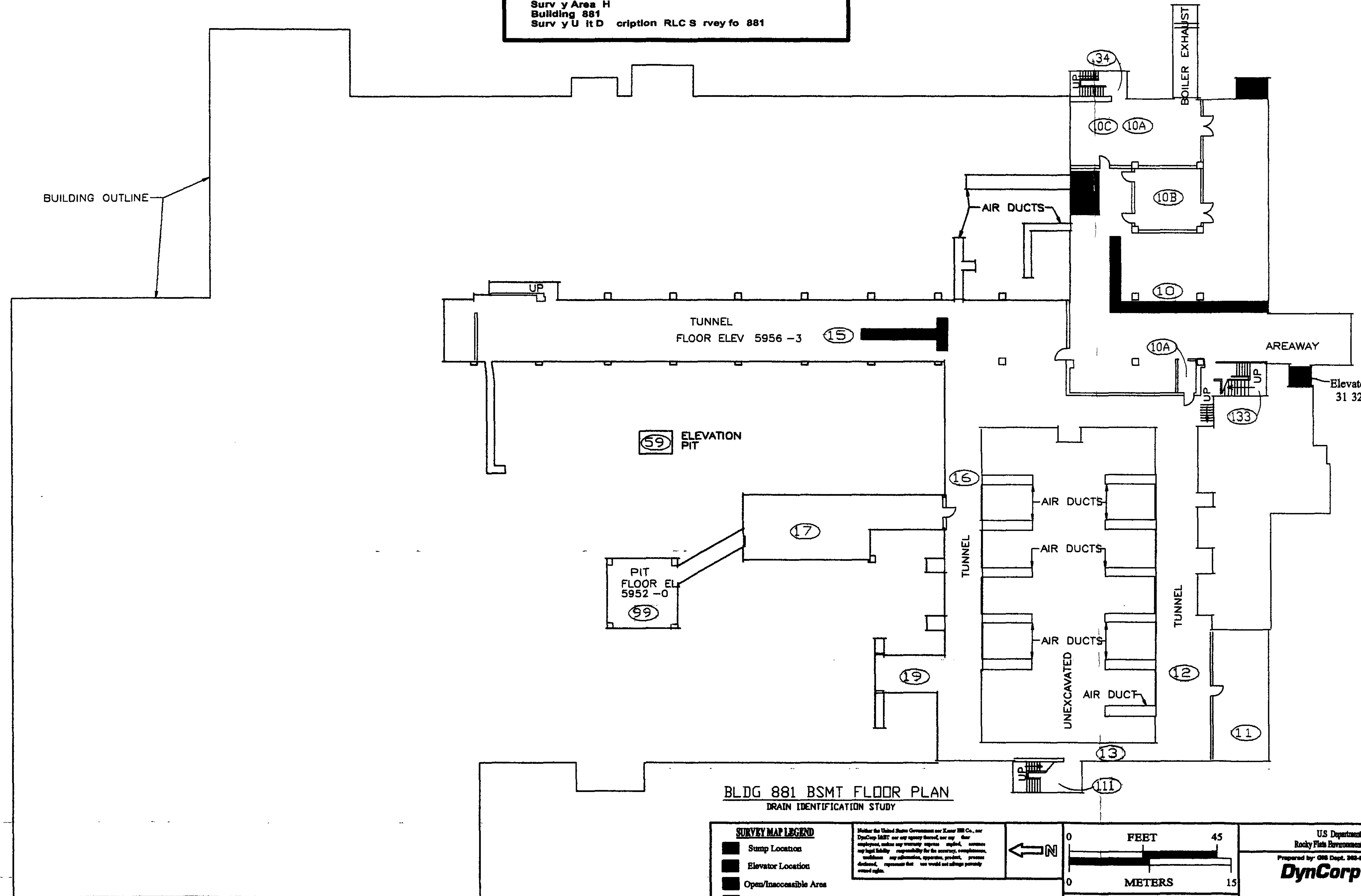
RLC SURVEY FOR BUILDING 881

Surv y Area H
Building 881
Surv y U it D cription RLC S rvey fo 881



BLDG 881 BSMT FLOOR PLAN

DRAIN IDENTIFICATION STUDY

SURVEY MAP LEGEND

- Sump Location
- Elevator Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

FEET 0 45
METERS 0 15
1 inch = 30 feet 1 grid sq = 1 sq m.

US Department of Energy
Rocky Flats Environmental Technology Site
Prepared by: GIS Dept. 303-966-7707
DynCorp

MAP ID: fy2002/02-09064/RLC-1 October 24, 2001

000-A-001

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RLC SURVEY FOR BUILDING 881

Survey Area H
Building 881
Survey Unit Description RLC Survey fo 881

SURVEY MAP LEGEND

- Elevator Location
- Sump Location
- Open/Inaccess Area
- Area Anoth Survey Unit

000-A 001

N

FEET 0 45
METERS 0 15
inch 6 feet grid sq sq m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site
Prepared by GIS Dept. 303-966-7707 Prepared for
DynCorp
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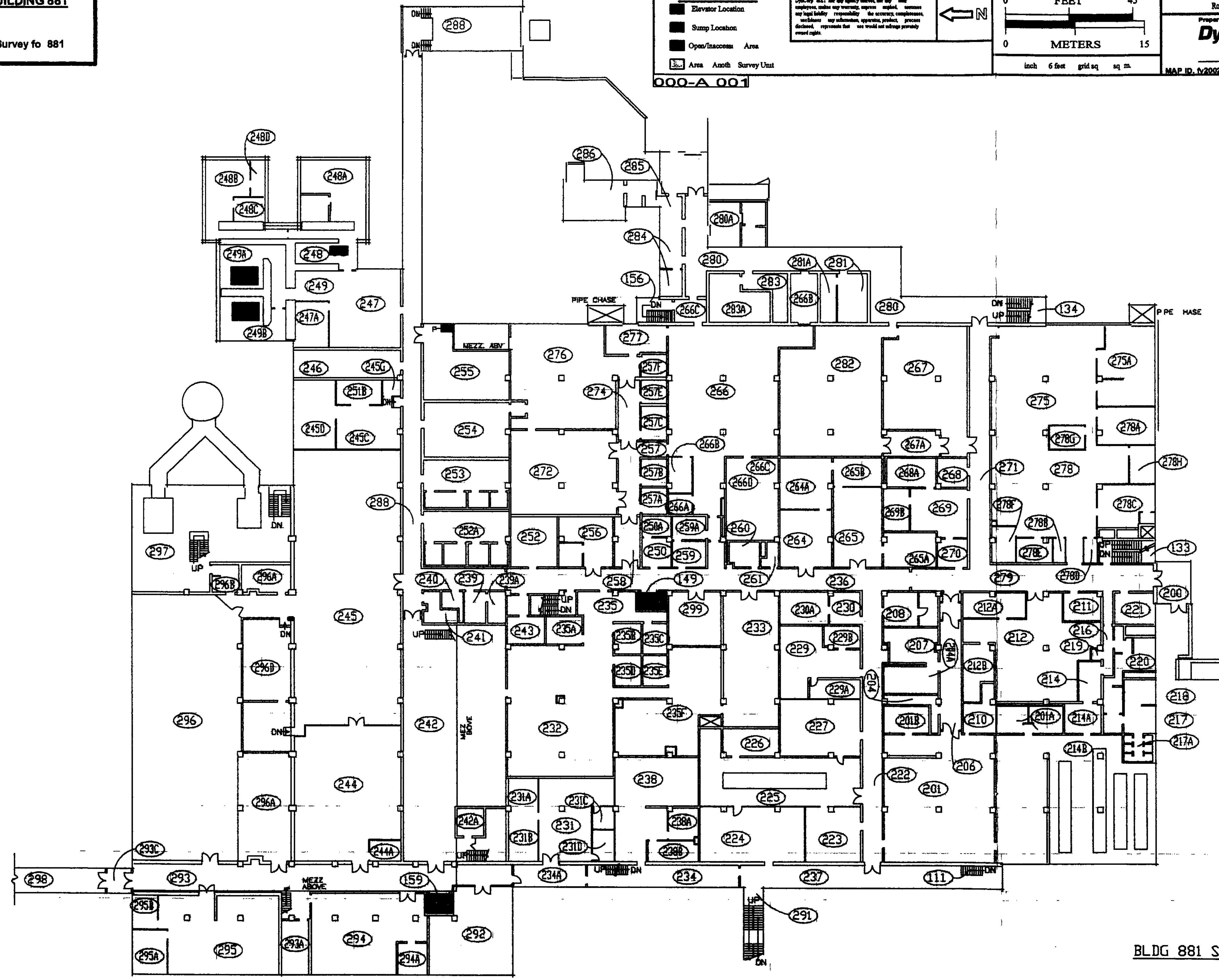
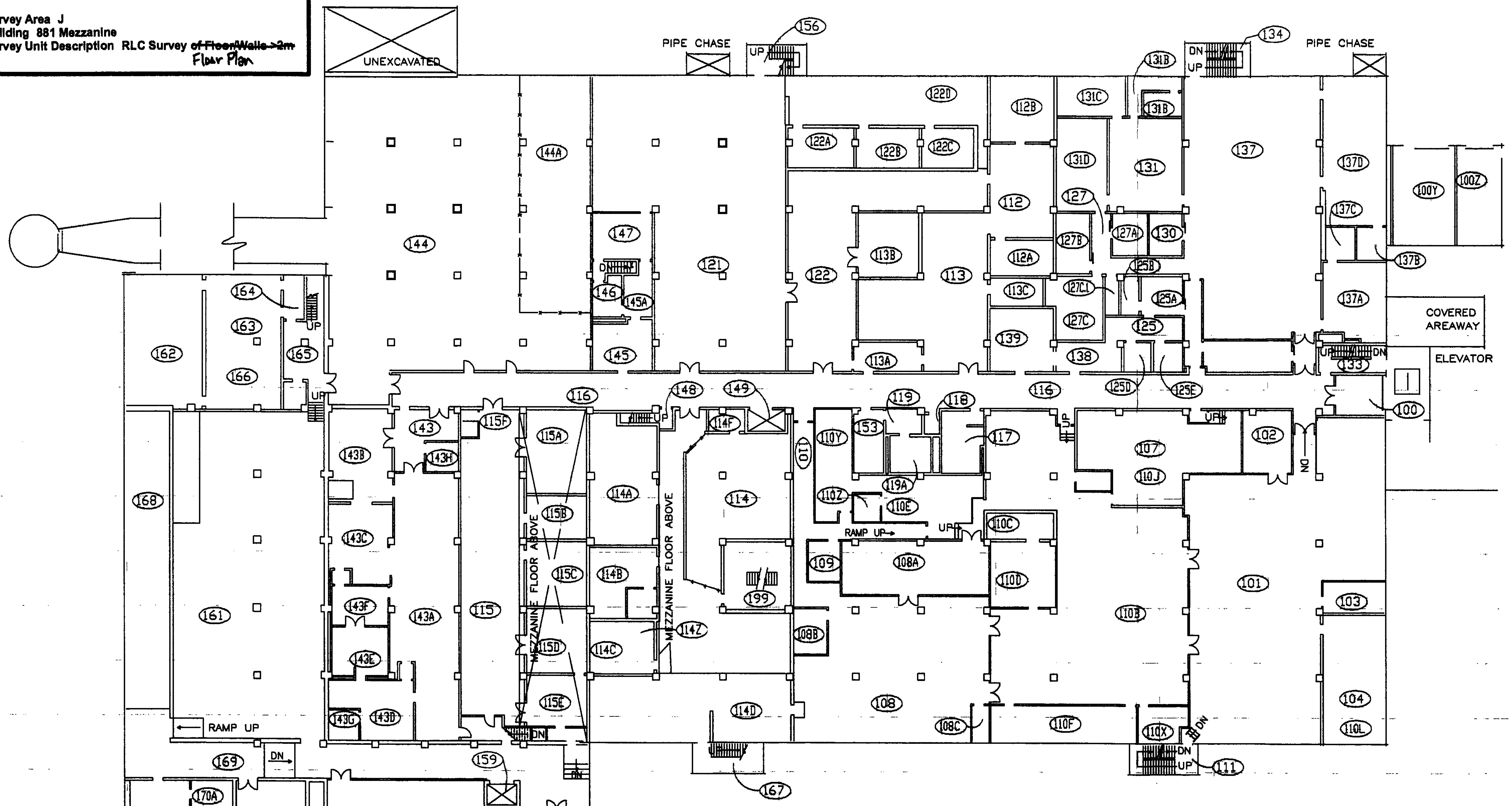
MAP ID. fy2002/02-0064/RLC-2 October 24, 2001
PAGE 2 OF 3



BLDG 881 SECOND FLOOR PLAN

RLC SURVEY FOR BUILDING 881

Survey Area J
Building 881 Mezzanine
Survey Unit Description RLC Survey ~~of Floor/Walls >2m~~ Floor Plan



BLDG 881 FIRST FLOOR PLAN

SURVEY MAP LEGEND
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

FEET 0 45
METERS 0 15
1 inch 30 feet 1 grid sq 1 sq. m.

US Department of Energy
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DynCorp

MAP ID: fy2002/02-0064/881-FP October 24, 2001
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000-A-001

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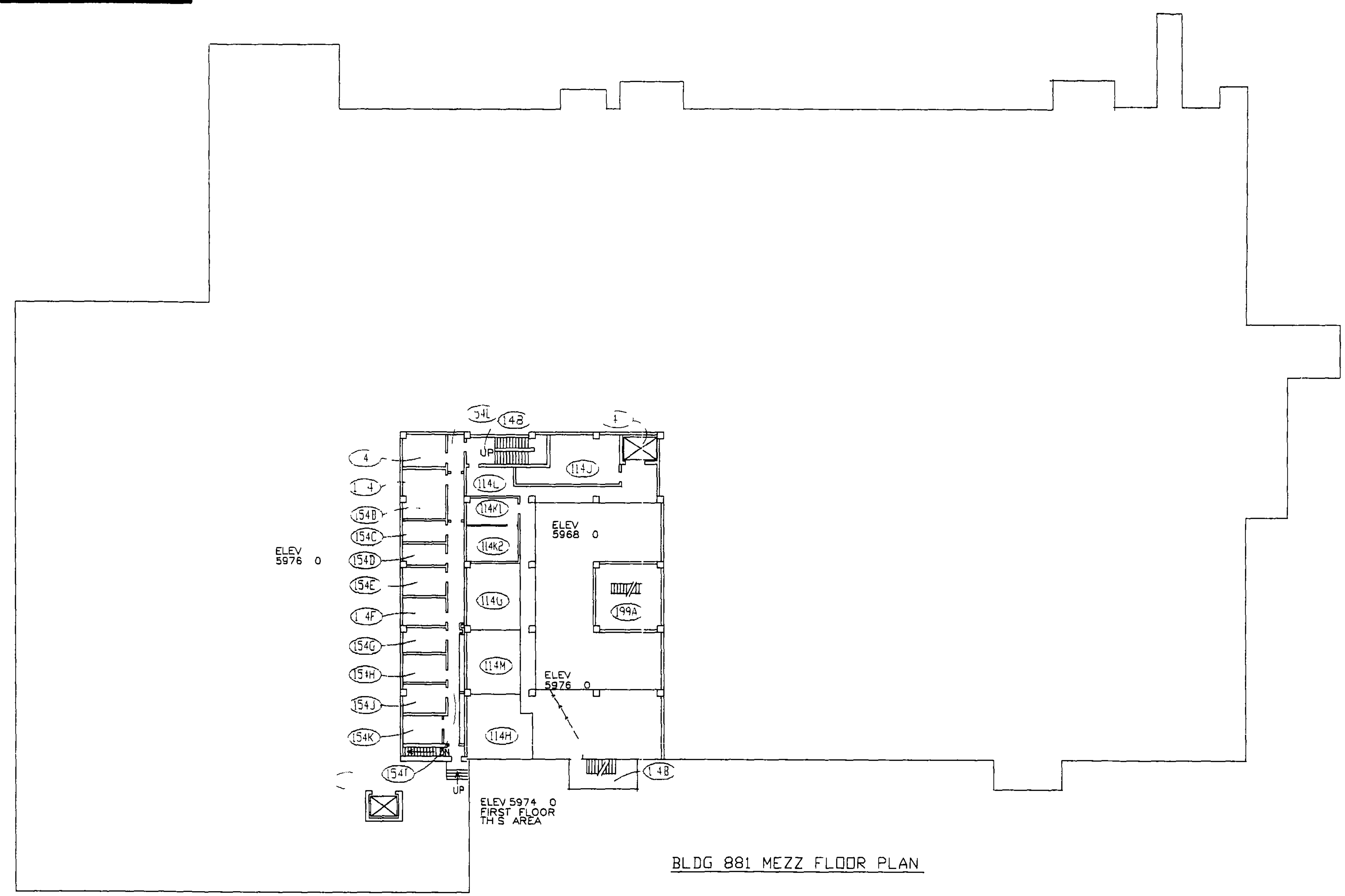
RLC SURVEY FOR BUILDING 881

Surv y Are J
Building 881 M zzanine
Surv y Unit D scripti n FLOOR PLAN



BLDG 881 MEZZ FLOOR PLAN

SURVEY MAP LEGEND		N	FEET / METERS	U.S Departmen f Energy Rocky Flats Environmental Technology S
mear TSA cation amp oca on Open/Inacc ssi Are Are Ano urvey			0 — 45 FEET 0 — 15 METERS ch feet grid m	repared by Dept. 03-96 70 Prepared or DynCorp [redacted] MA fy 2/ -0064 mezz-F 25,

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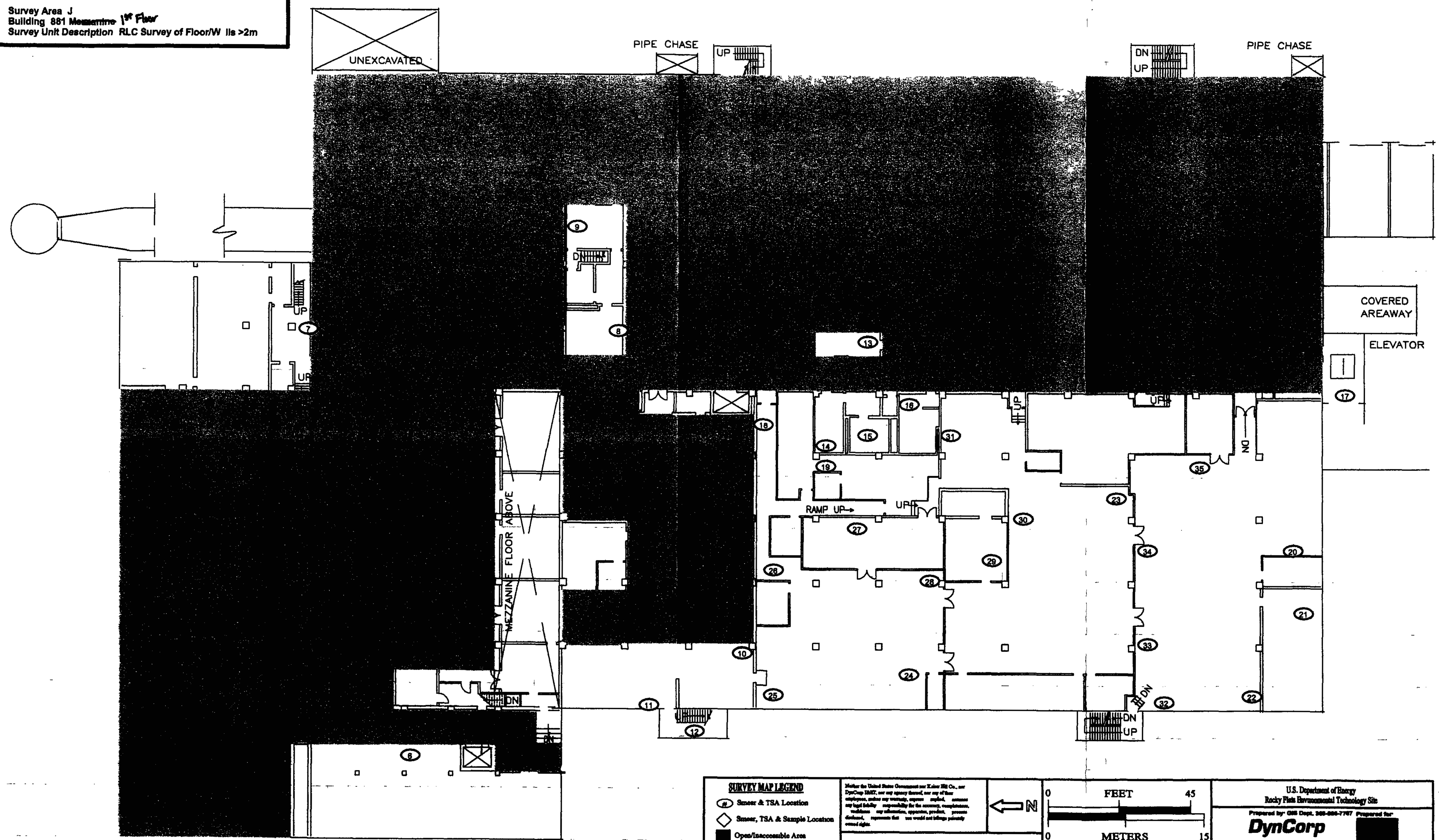
RLC SURVEY FOR BUILDING 881

Survey Area J
Building 881 ~~Mezzanine~~ 1st Floor
Survey Unit Description RLC Survey of Floor/Walls >2m



BLDG 881 FIRST FLOOR PLAN

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

FEET 0 45

METERS 0 15

1 inch = 30 feet 1 grid sq. = 1 sq. m.

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MAP ID: fy2002/02-0084/881-1 October 24, 2001

000-A-001

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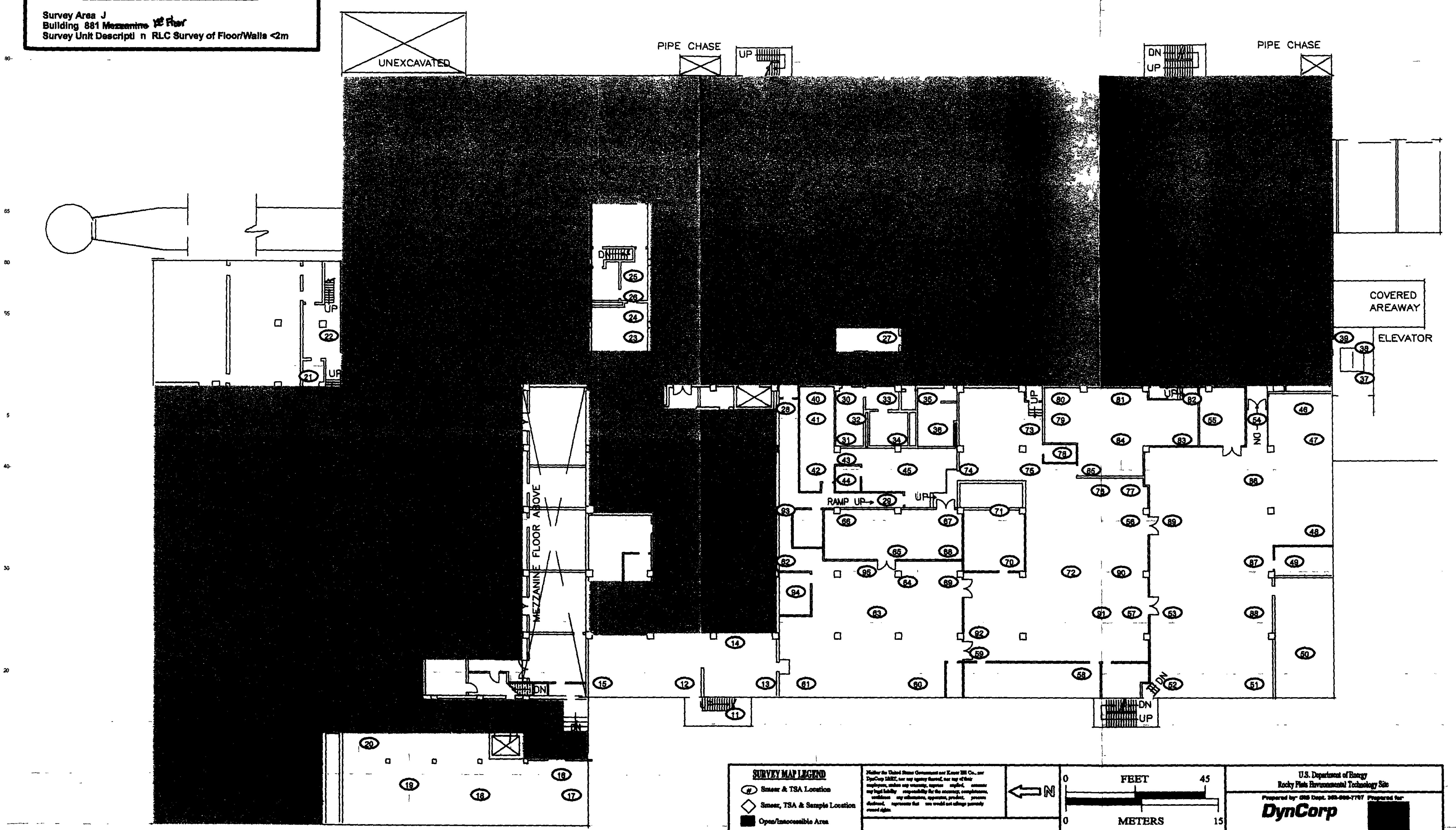
RLC SURVEY FOR BUILDING 881

Survey Area J
Building 881 ~~Mezzanine~~ 1st Floor
Survey Unit Descripti n RLC Survey of Floor/Walls <2m



BLDG 881 FIRST FLOOR PLAN

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

FEET 0 45
METERS 0 15
1 inch 30 feet 1 grid sq 1 sq m.

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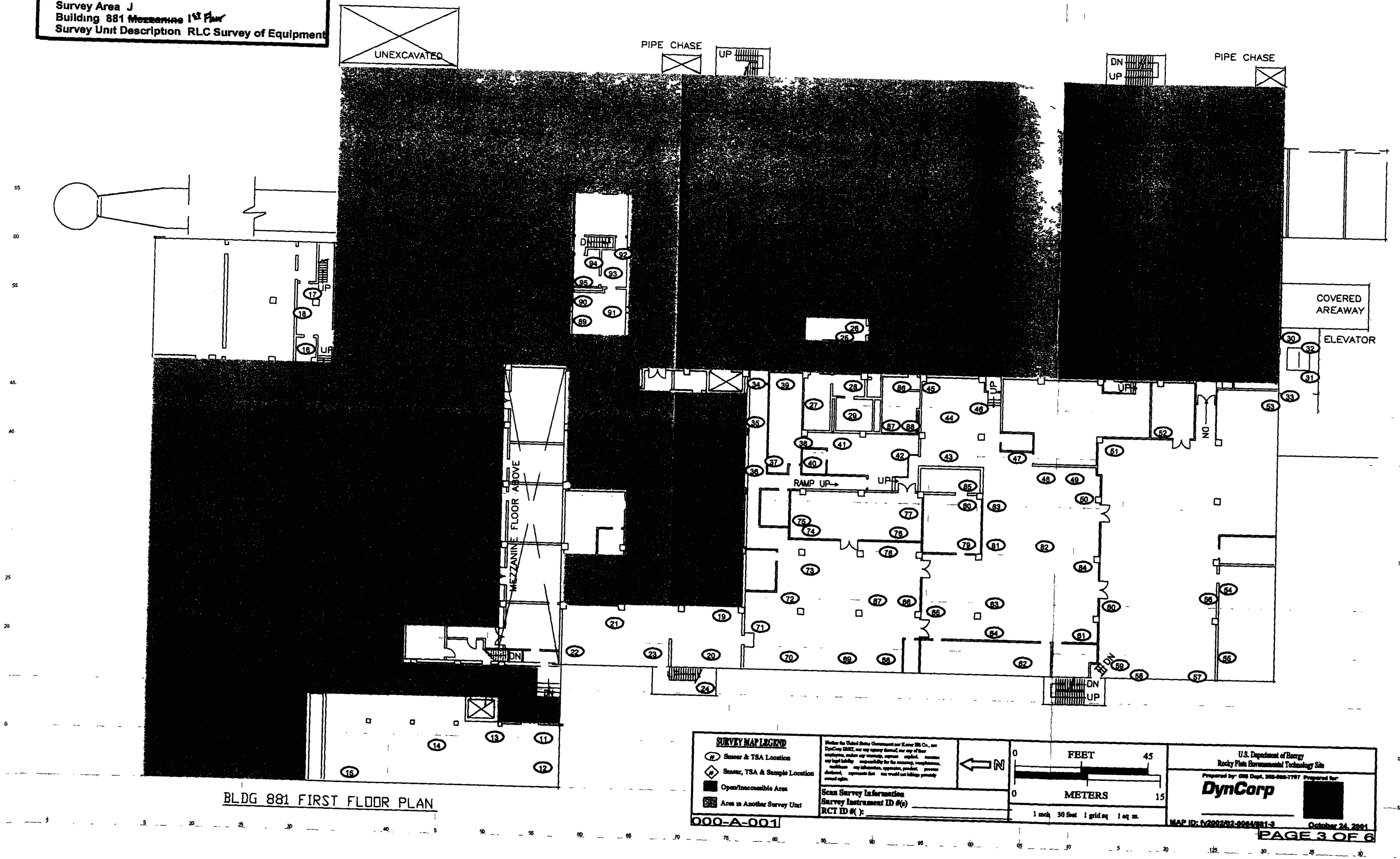
RLC SURVEY FOR BUILDING 881

Survey Area J
Building 881 ~~Mezzanine~~ 1st Floor
Survey Unit Description RLC Survey of Equipment



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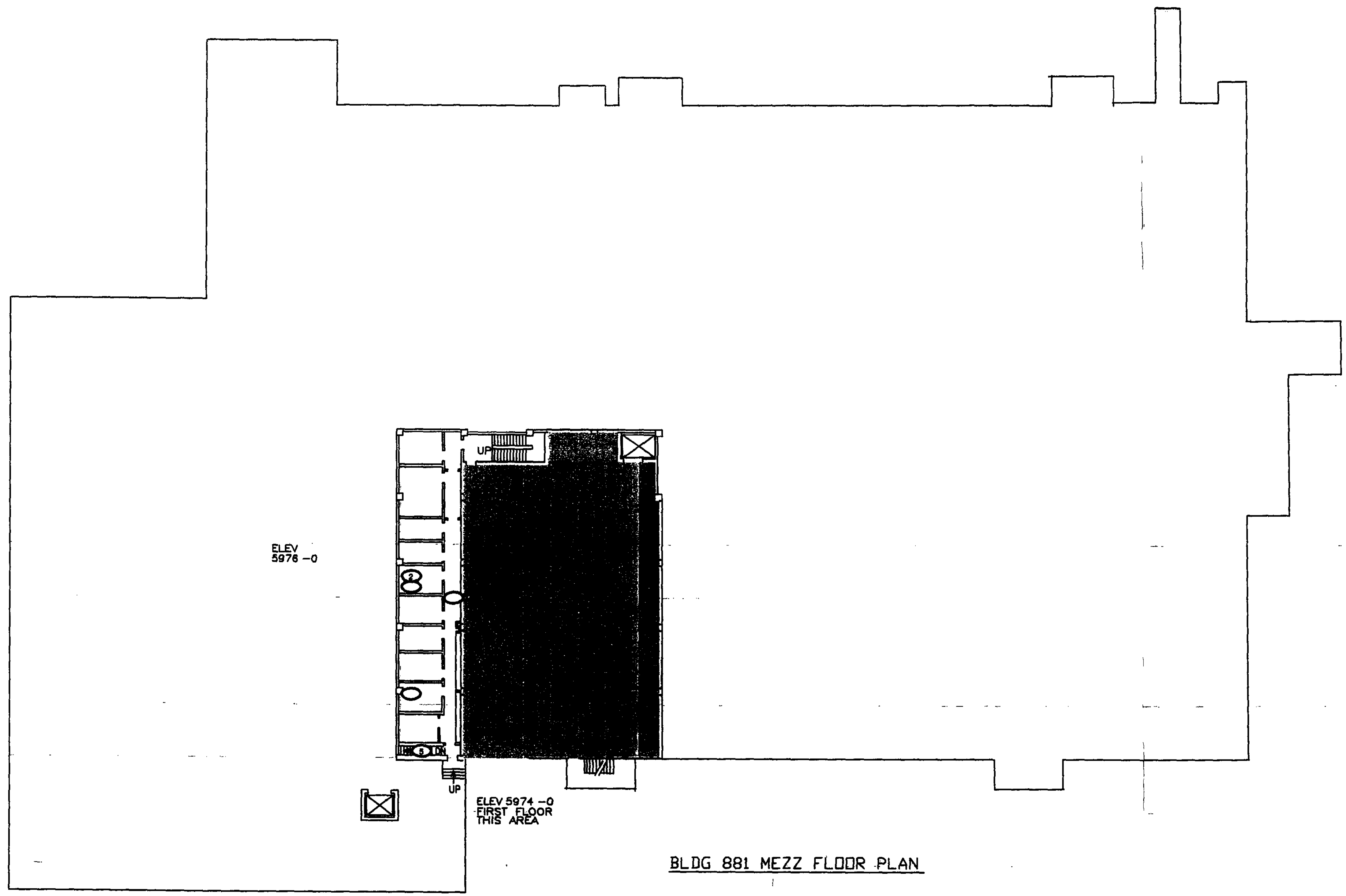
RLC SURVEY FOR BUILDING 881

Survey Area J
Building 881 Mezzanine
Survey Unit Description RLC Survey of Floor/Walls >2m



BLDG 881 MEZZ FLOOR PLAN

SURVEY MAP LEGEND
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

FEET 0 45
METERS 0 15
inch 36 feet 1 grid sq 1 sq m.

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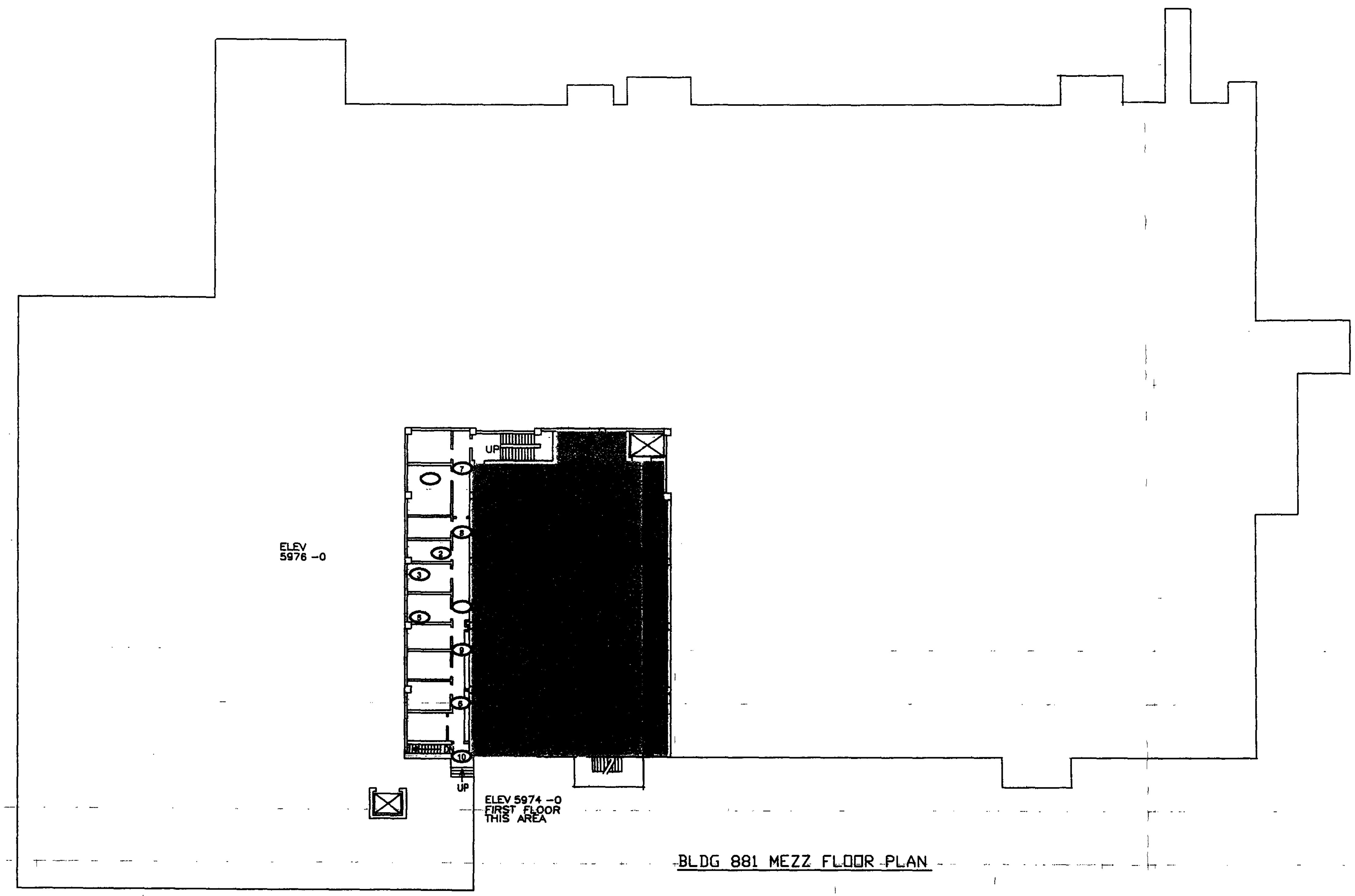
RLC SURVEY FOR BUILDING 881

Survey Area J
Building 881 Mezzanine
Survey Unit Description RLC Survey of Floor/Walls <2m



BLDG 881 MEZZ FLOOR PLAN

SURVEY MAP LEGEND
Smear & TSA Location
Smear TSA & Sample Location
Open/Inaccessible Area
Area in Another Survey Unit

N

0 FEET 45
0 METERS 15
1 inch 36 feet 1 grid sq 1 sq m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

DynCorp

October 26, 2001

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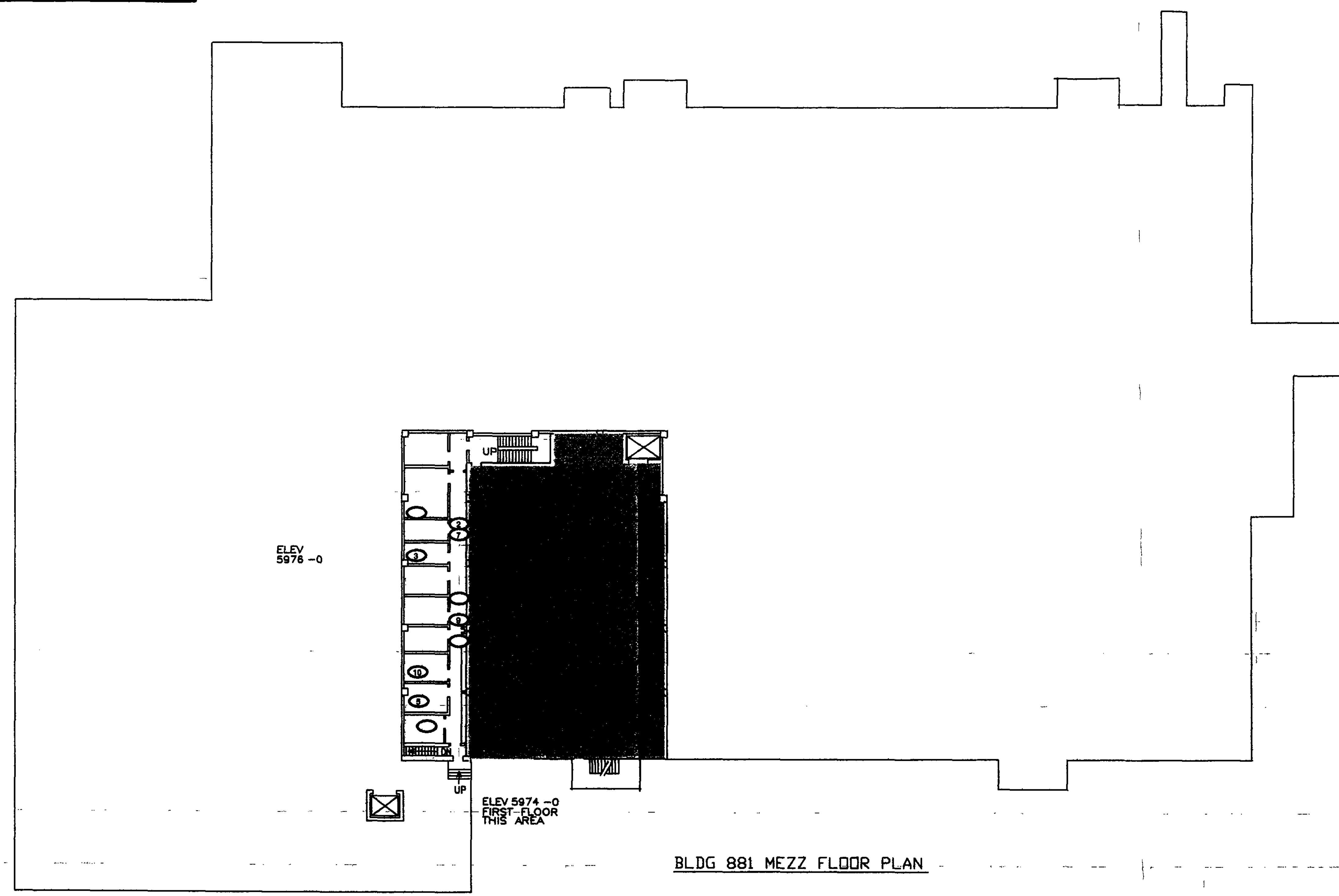
132

RLC SURVEY FOR BUILDING 881

Survey Area J
Building 881 Mezzanine
Survey Unit Description RLC Survey for Equipment



BLDG 881 MEZZ FLOOR PLAN

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 45
0 METERS 15

1 inch 36 feet 1 grid sq 1 sq m.

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Rocky Flats Environmental Technology Site

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MAP ID. fy2002/02-0094/mezz-3

October 26, 2001

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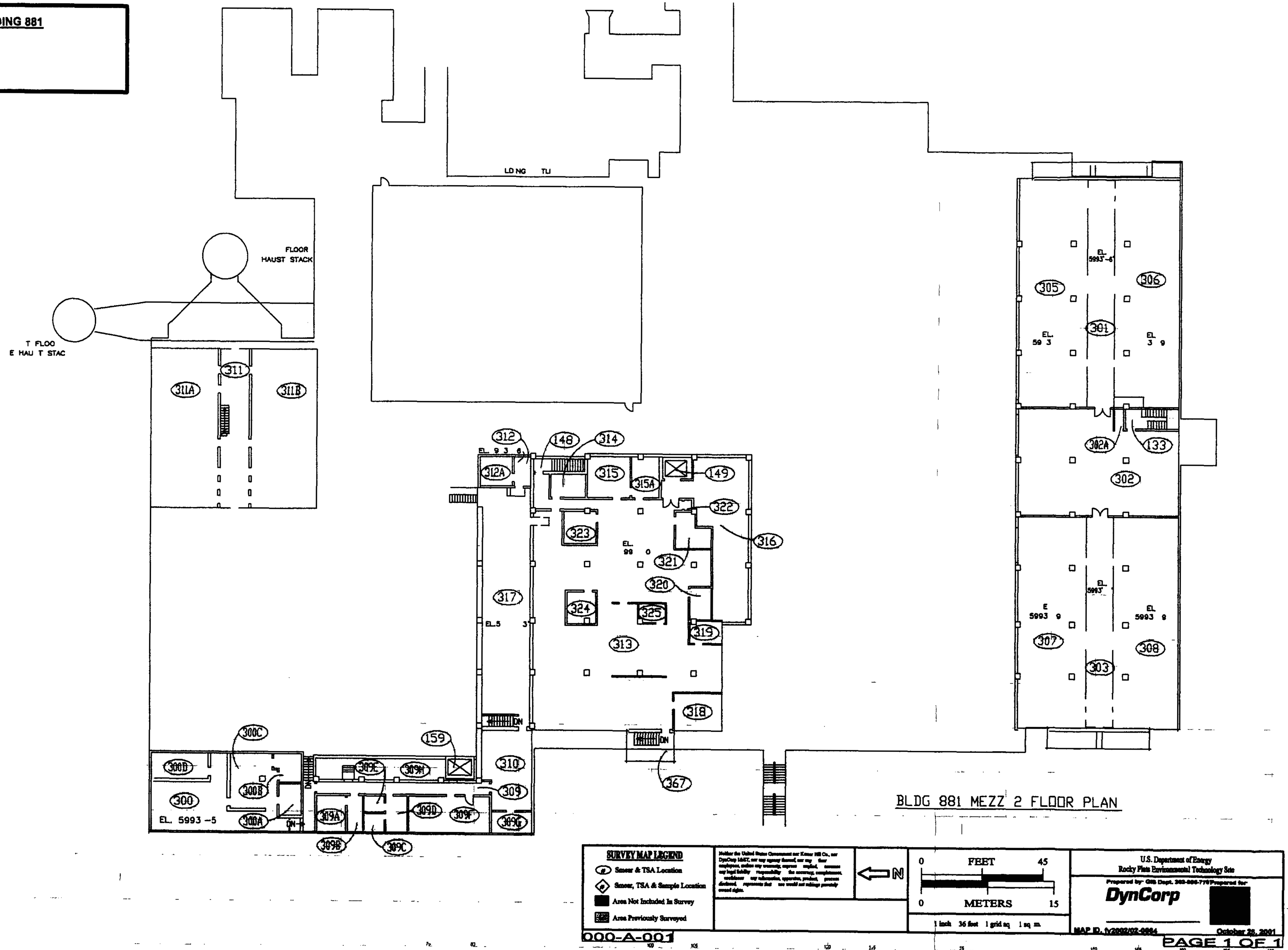
133

RLC SURVEY FOR BUILDING 881

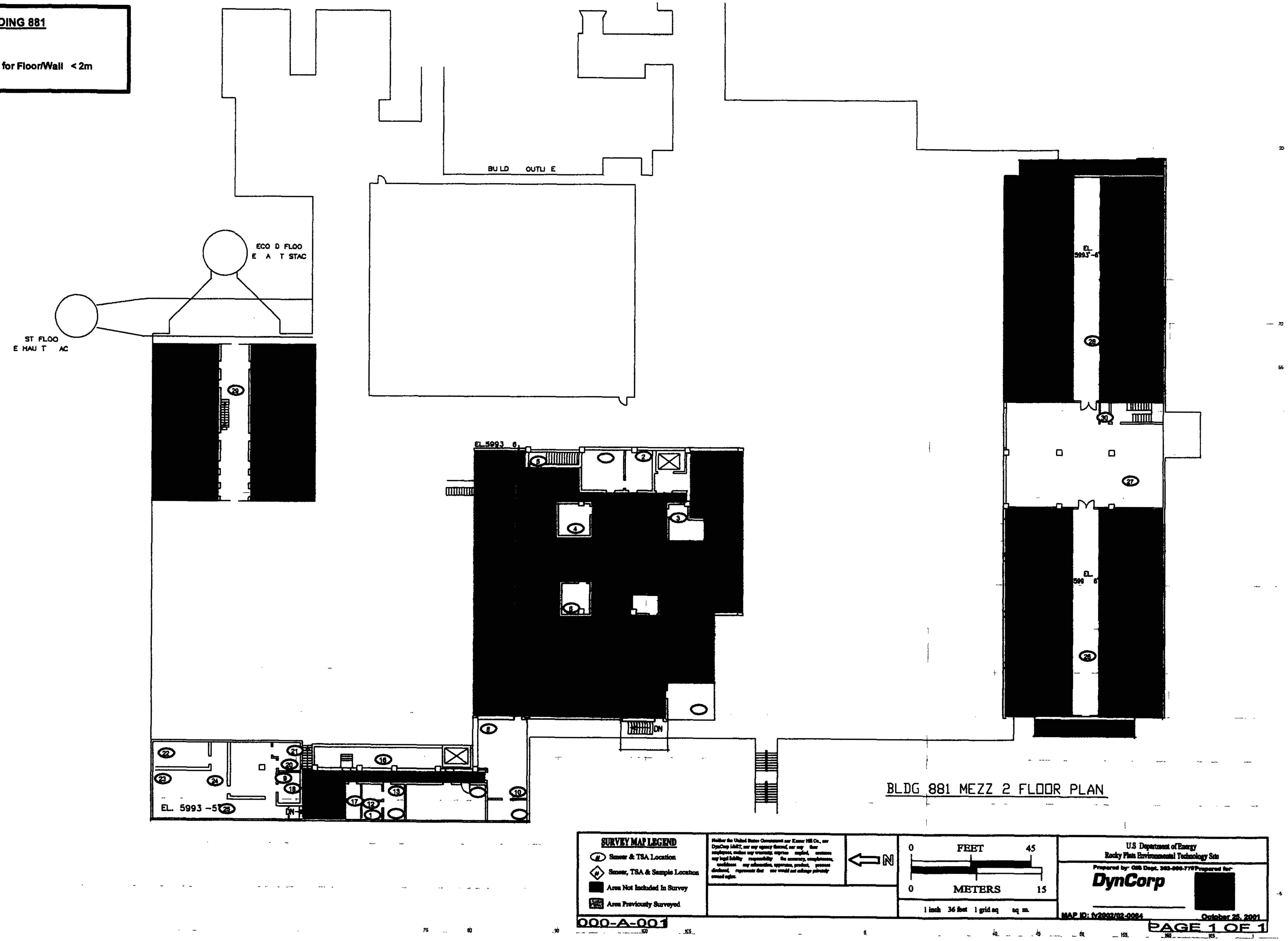
Survey Area K
Building 881 2nd Floor Mezzanine
Survey Unit Description Floor Plan



145

RLC SURVEY FOR BUILDING 881

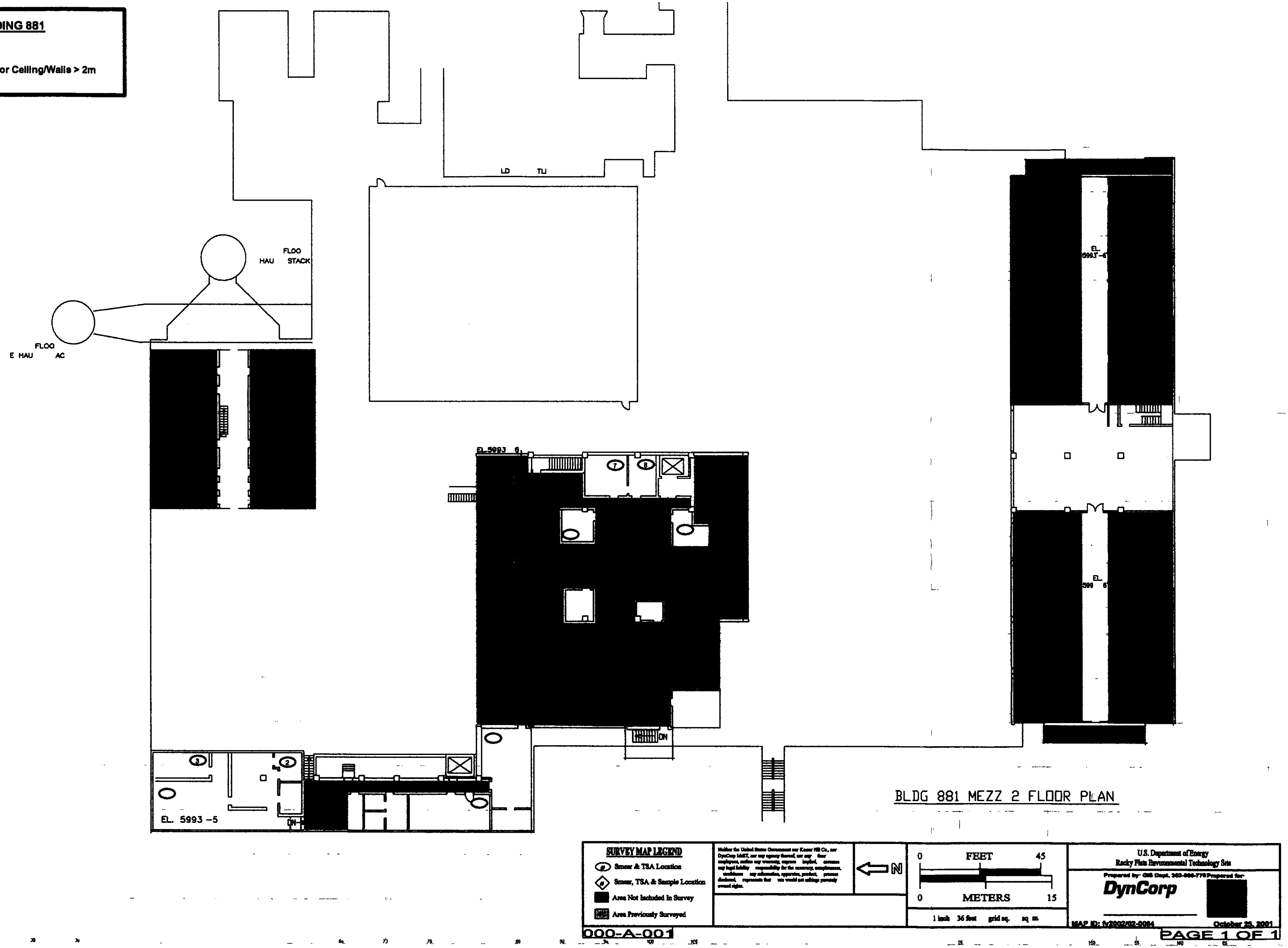
Survey Area K
Building 881 2nd floor Mezzanine
Survey Unit Description RLC Survey for Floor/Wall < 2m



146

RLC SURVEY FOR BUILDING 881

Survey Area K
Building 881 2nd Floor Mezzanine
Survey Unit Description RLC Survey for Ceiling/Walls > 2m



147

RLC SURVEY FOR BUILDING 881

Survey Area K
Building 881 2nd Floor Mezzanine
Survey Unit Description RLC Survey for Equipment

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear TSA & Sample Location
- Area Not Included In Survey
- Area Previously Surveyed

N

0 FEET 45

0 METERS 15

inch 36 feet grid sq sq m.

U.S Department of Energy
Rocky Flats Environmental Technology Site

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MAP ID. fy2002/02-0064 October 25, 2001

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148

RLC SURVEY FOR BUILDING 881

Survey Area K
Building 881 2nd Floor
Survey Unit Description Floor Plan

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear TSA & Sample Location
- Area No Included In Survey
- Area Previously Surveyed

N

FEET 0 45
METERS 0 15
1 inch 6 feet grid sq sq m.

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MA fy2002/02-0064 October 25, 2001

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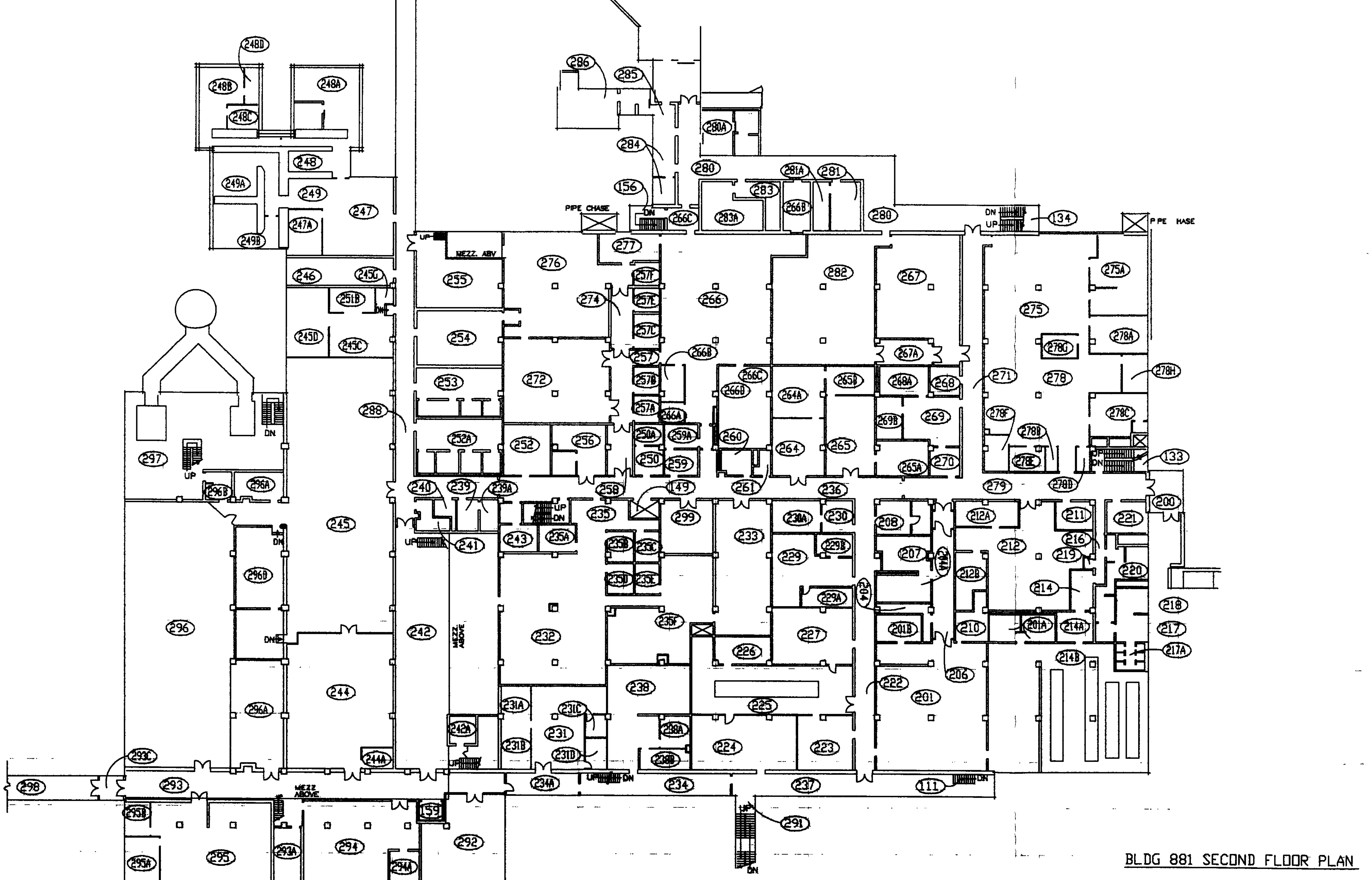
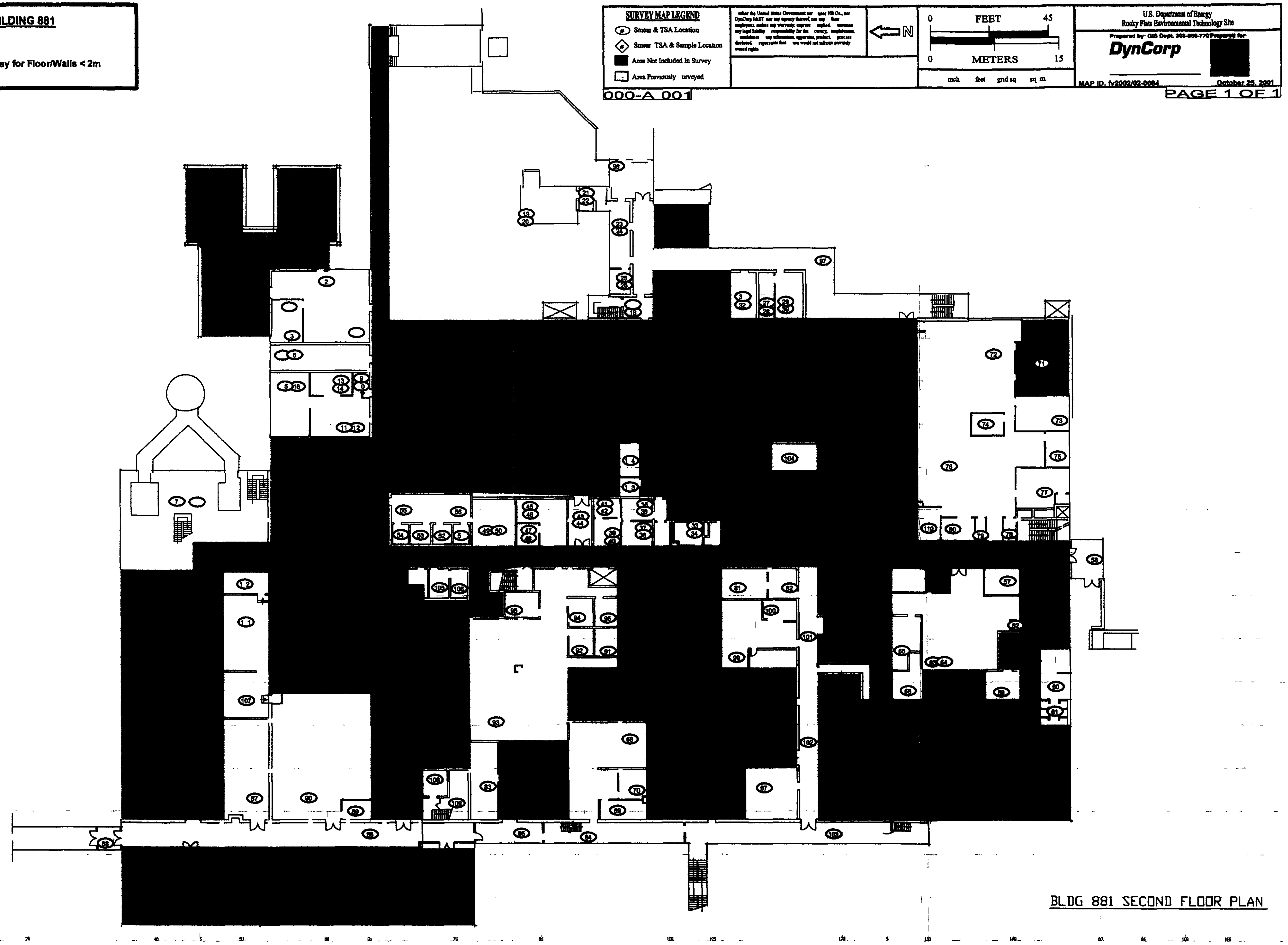
PAGE 1 OF 1



149

RLC SURVEY FOR BUILDING 881

Survey Area K
Building 881 2nd Floor
Survey Unit Description RLC Survey for Floor/Walls < 2m



150

RLC SURVEY FOR BUILDING 881

Survey Area K
Building 881 2nd Floor
Survey Unit Descriptio RLC Surv y for Ceiling/Walls > 2m

SURVEY MAP LEGEND

- # Smear & TSA Location
- Smear TSA Sample Location
- Area Not Included In Survey
- Area Previous Surveyed

000-A 001

N

FEET 0 45
METERS 0 15
inch 36 feet grid sq sq m.

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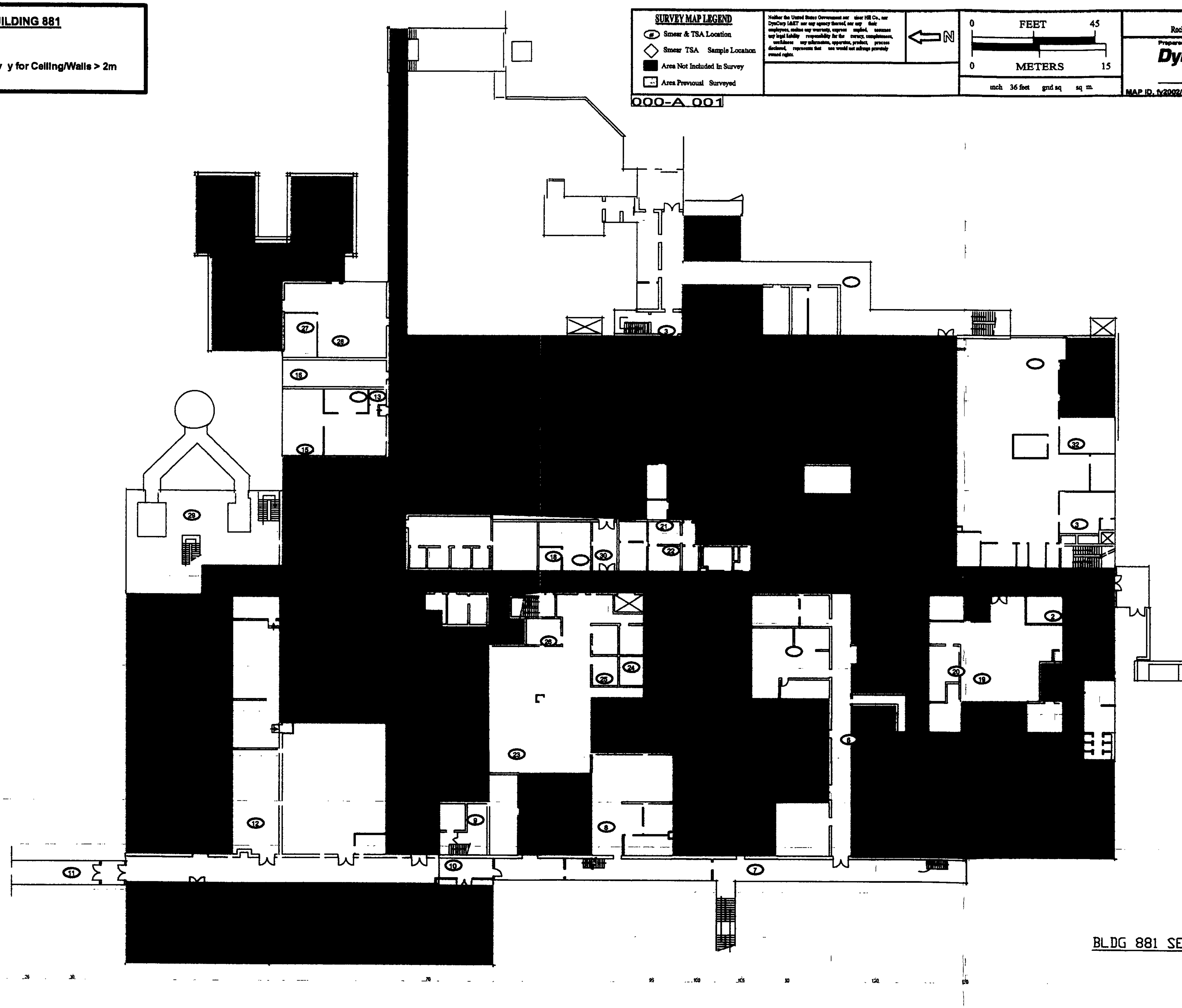

151

RLC SURVEY FOR BUILDING 881

Survey Area K
Building 881 2nd Floor
Survey Unit Description RLC Survey for Equipment

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear TSA & Sample Location
- Area Not Included In Survey
- Area Previously urveyed

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N

FEET 0 45
METERS 0 15
inch 6 feet grid sq sq m

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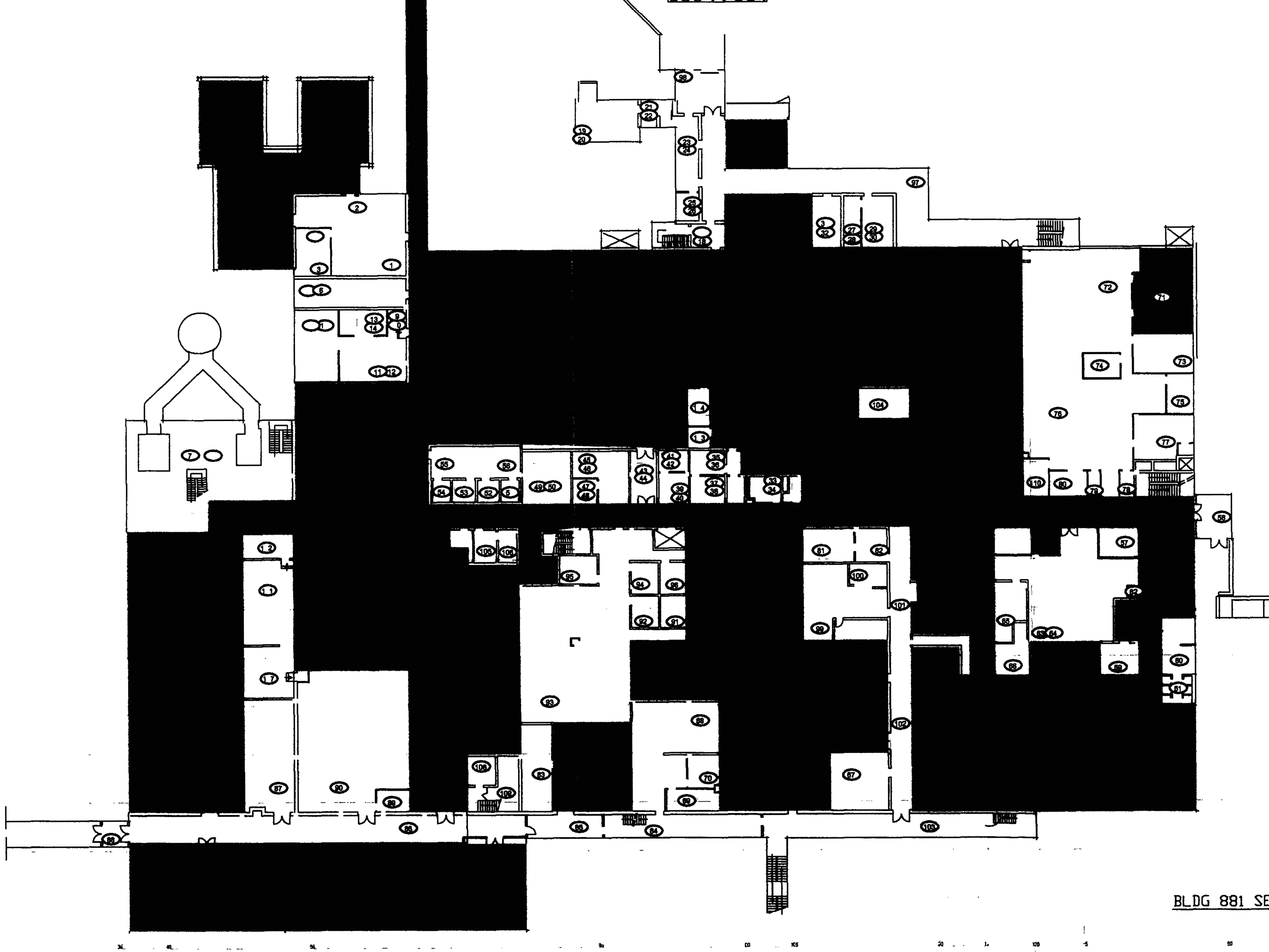

BLDG 881 SECOND FLOOR PLAN

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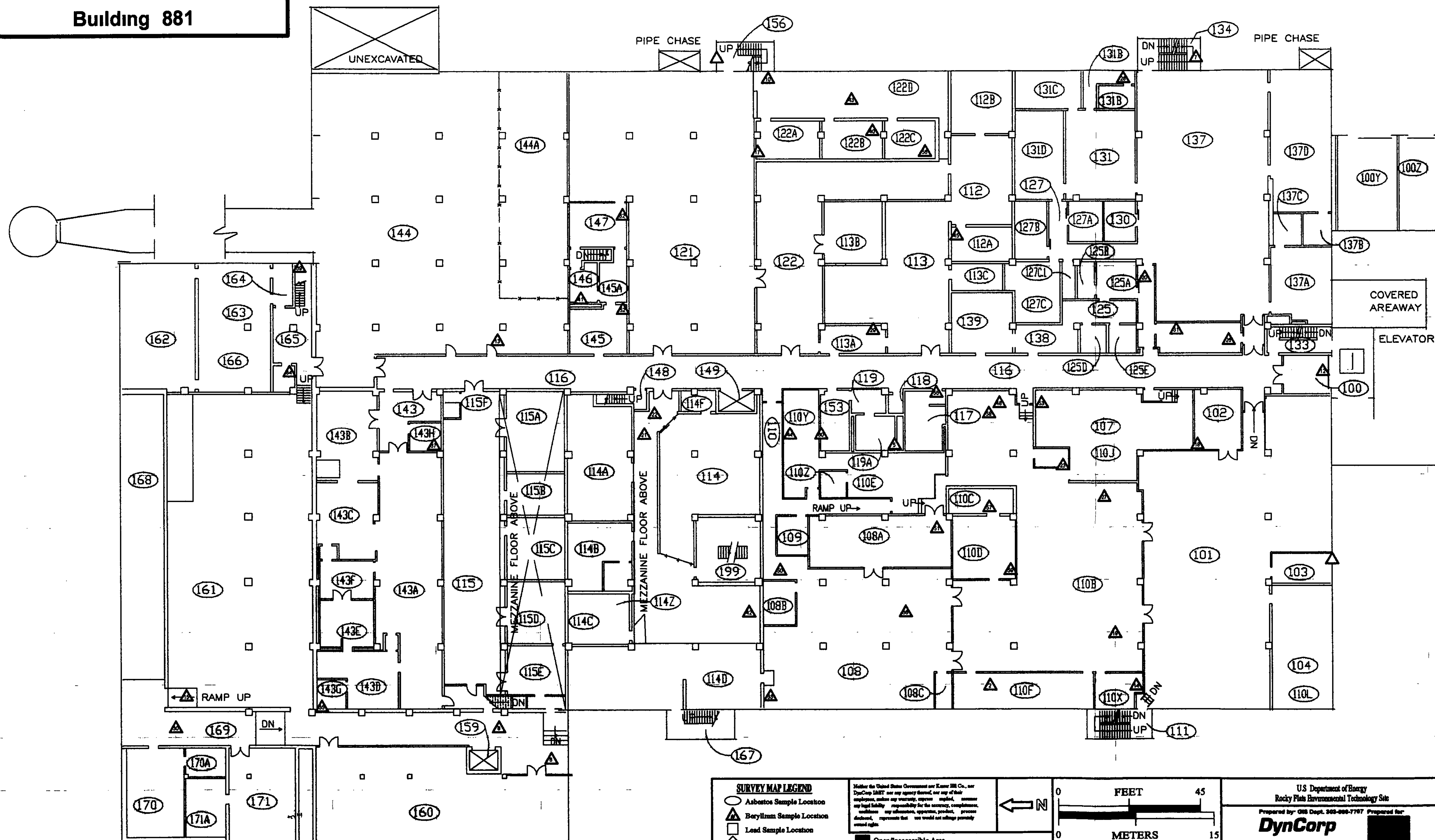
CHEMICAL SAMPLE MAP FOR B881

Building 881



BLDG 881 FIRST FLOOR PLAN

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sampl Location
- PCB Sample Location
- Open/Inaccessible Area
- Area Another Survey Unit

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N

FEET 0 45

METERS 0 15

1 inch 30 feet 1 grid sq 1 sq m.

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[redacted]

MAP ID: fy2001/01-0976/881-1-BE September 24, 2001

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PAGE 1 OF 1

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CHEMICAL SAMPLE MAP FOR B881

Building 881

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Loca on
- Lead Samp Location
- CRA/CERCLA Sample Location
- PCB Samp Location
- Open/Inaccessible Area
- Area Another urvey Uni

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N

FEET 0 45

METERS 0 15

mc feet grid sq sq m.

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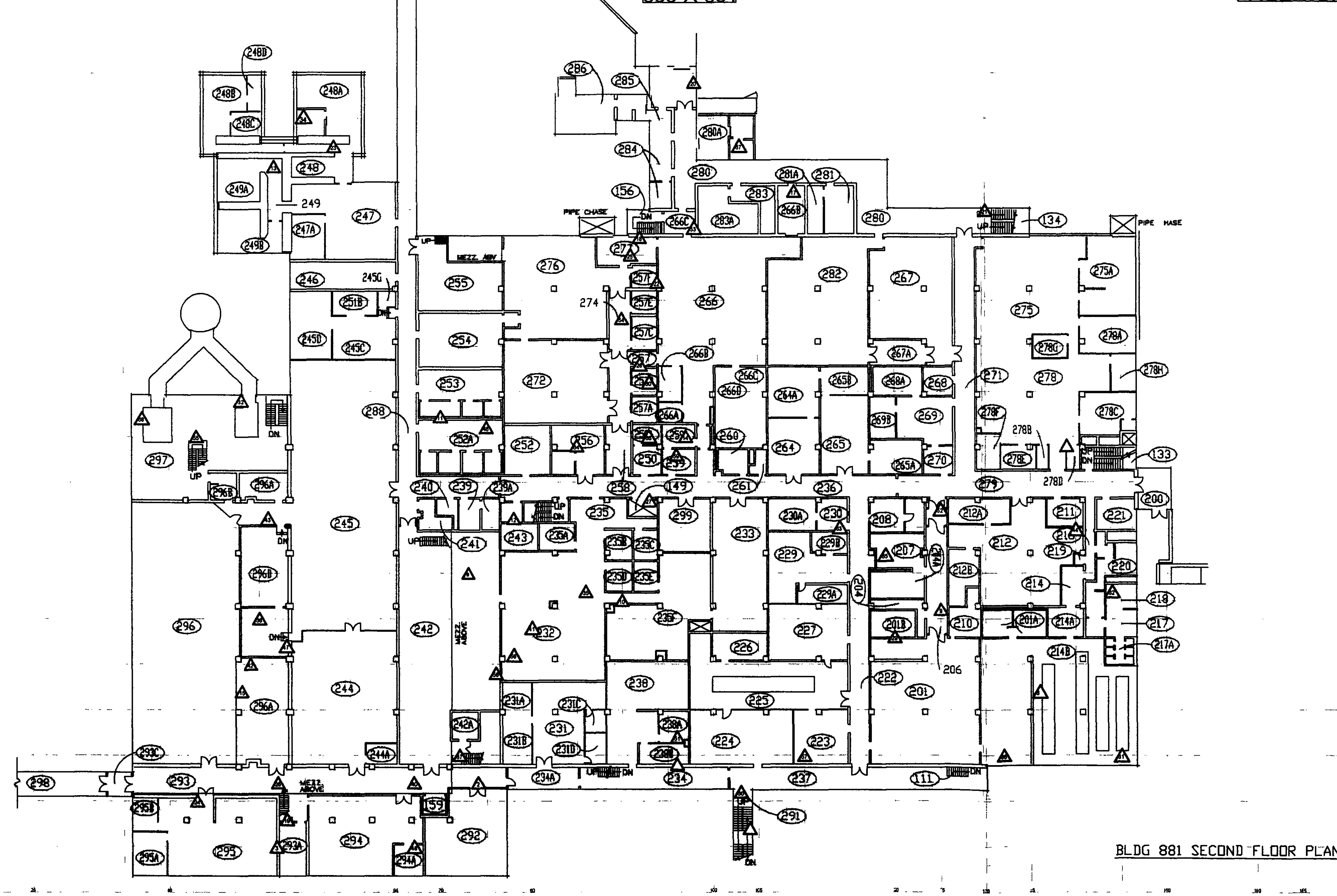

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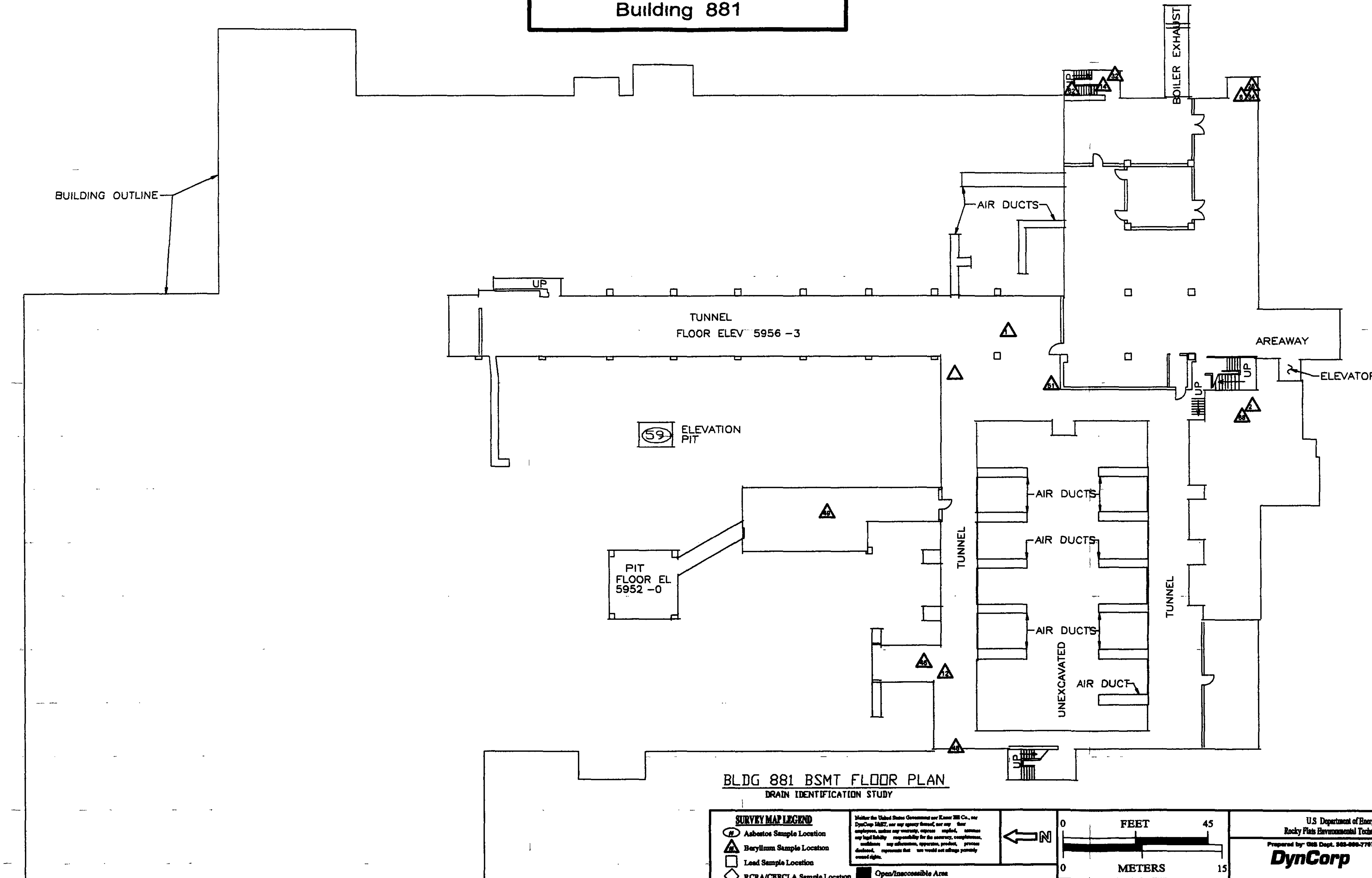
CHEMICAL SAMPLE MAP FOR B881

Building 881



BLDG 881 BSMT FLOOR PLAN

DRAIN IDENTIFICATION STUDY

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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METERS 0 15

1 inch 30 feet 1 grid sq 1 sq m.

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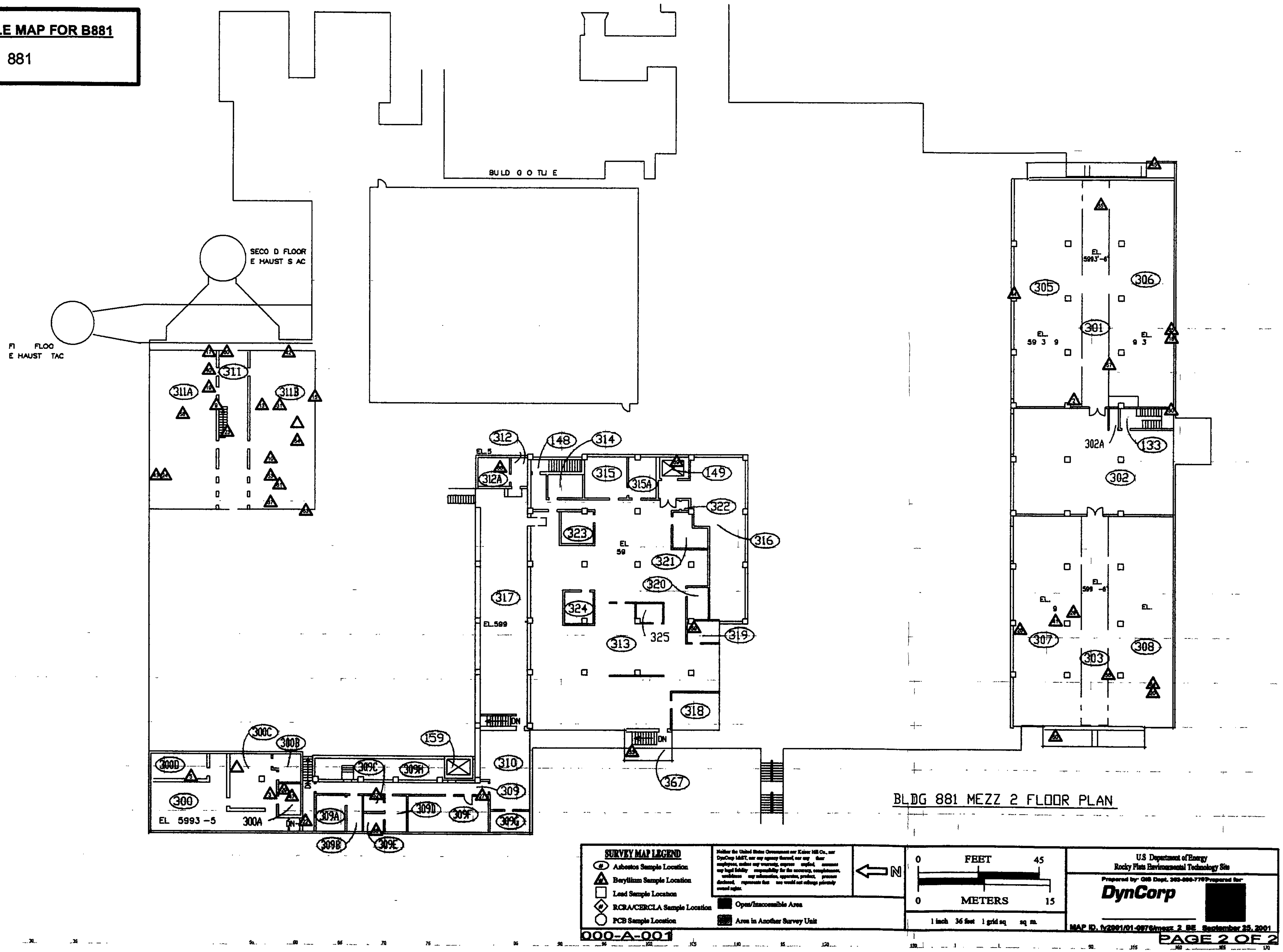
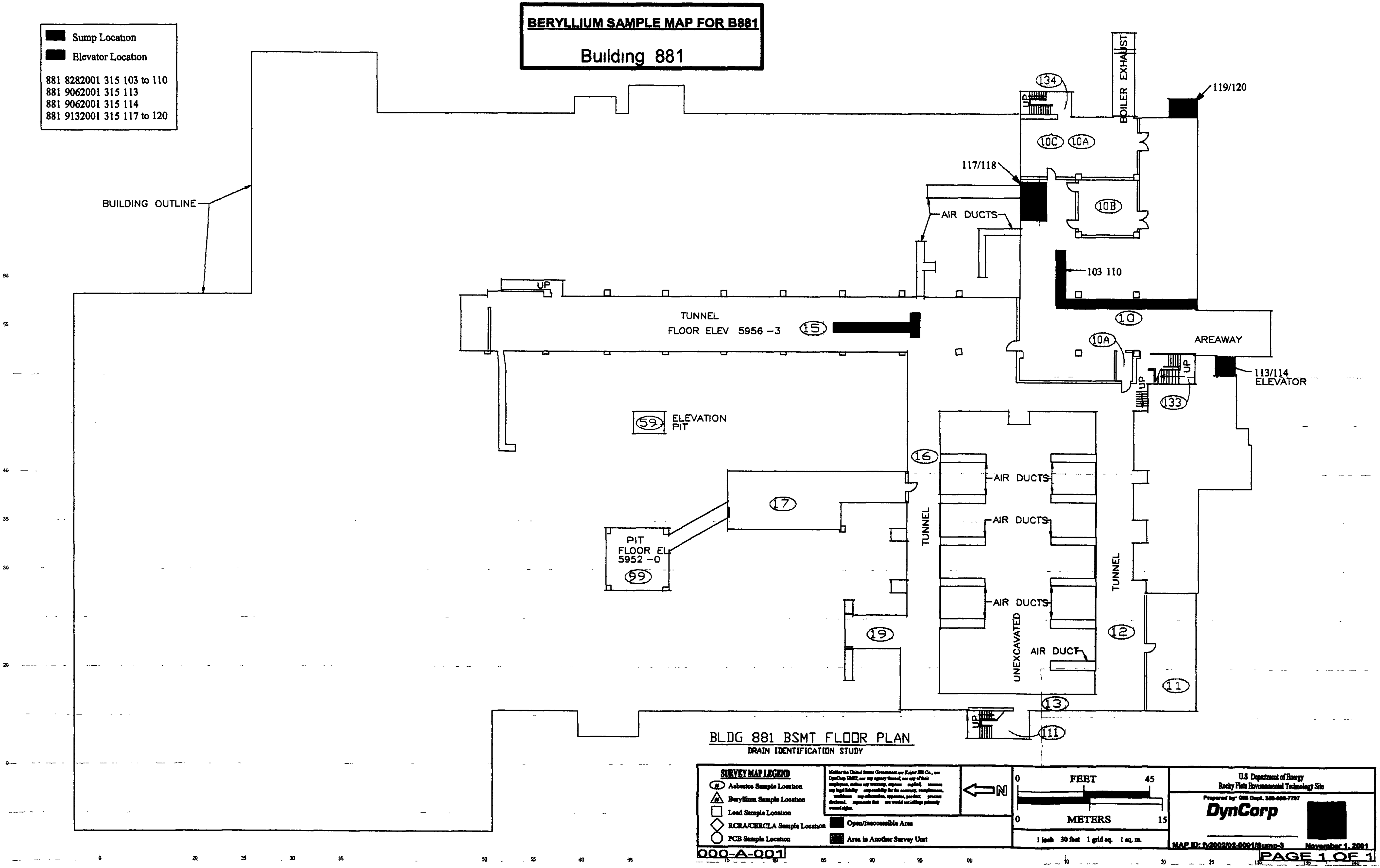
CHEMICAL SAMPLE MAP FOR B881

Building 881



275


BERYLLIUM SAMPLE MAP FOR B881
Building 881
Sump Location
Elevator Location
881 8282001 315 103 to 110
881 9062001 315 113
881 9062001 315 114
881 9132001 315 117 to 120
BUILDING OUTLINE
BOILER EXHAUST
119/120
134
UP
10C
10A
117/118
10B
AIR DUCTS
103 110
UP
TUNNEL
FLOOR ELEV 5956 -3
15
10
10A
AREAWAY
UP
113/114
ELEVATOR
UP
133
59
ELEVATION
PIT
16
AIR DUCTS
AIR DUCTS
AIR DUCTS
17
PIT
FLOOR EL
5952 -0
99
TUNNEL
TUNNEL
UNEXCAVATED
AIR DUCT
12
19
11
13
UP
111
BLDG 881 BSMT FLOOR PLAN
DRAIN IDENTIFICATION STUDY
SURVEY MAP LEGEND
Asbestos Sample Location
Beryllium Sample Location
Lead Sample Location
RCRA/CERCLA Sample Location
PCB Sample Location
Open/Inaccessible Area
Area in Another Survey Unit
N
FEET
0
45
METERS
0
15
1 inch 30 feet 1 grid sq. 1 sq. m.
U.S. Department of Energy
Rocky Flats Environmental Technology Site
DynCorp
November 1, 2001
000-A-001
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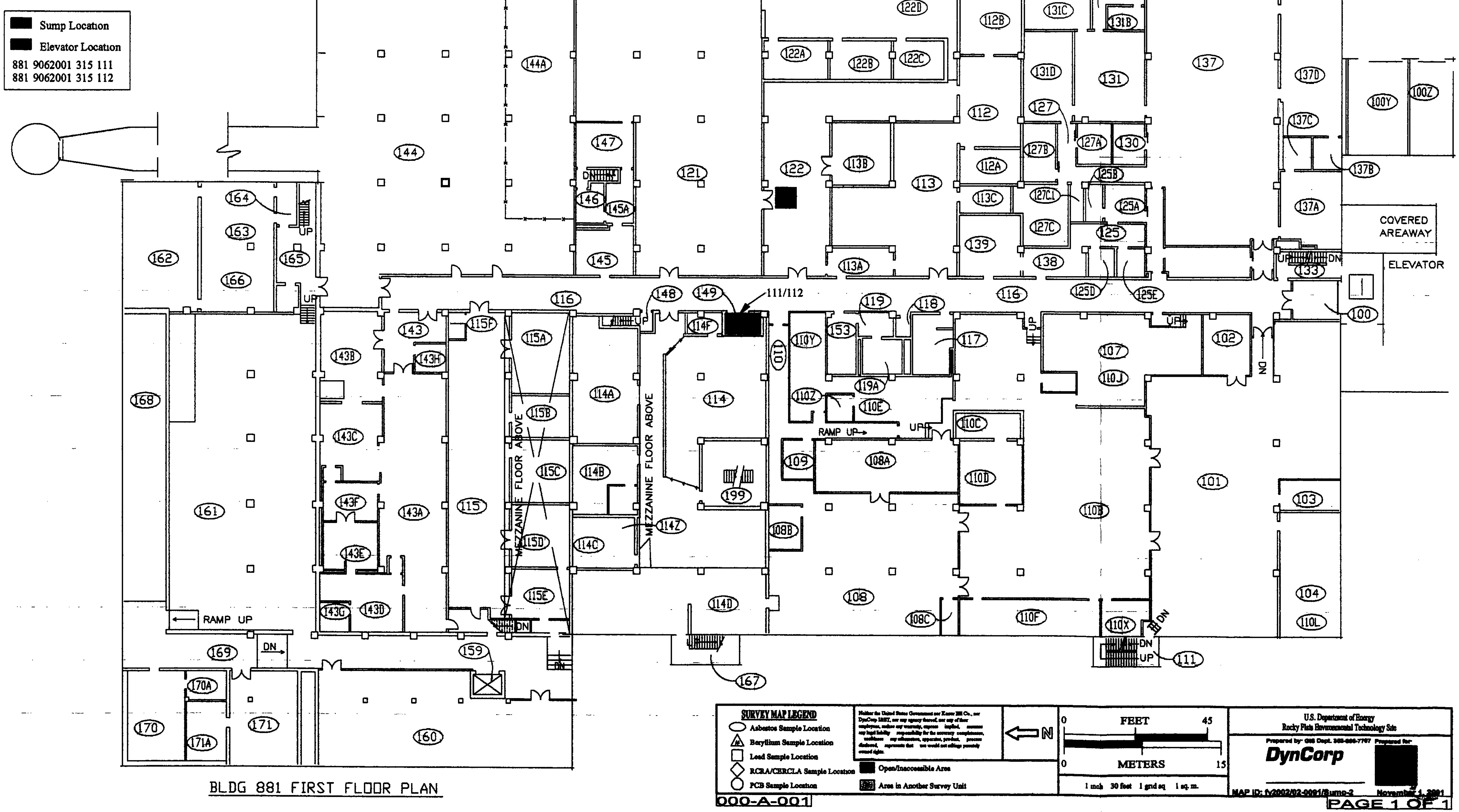
BERYLLIUM SAMPLE MAP FOR B881

Building 881



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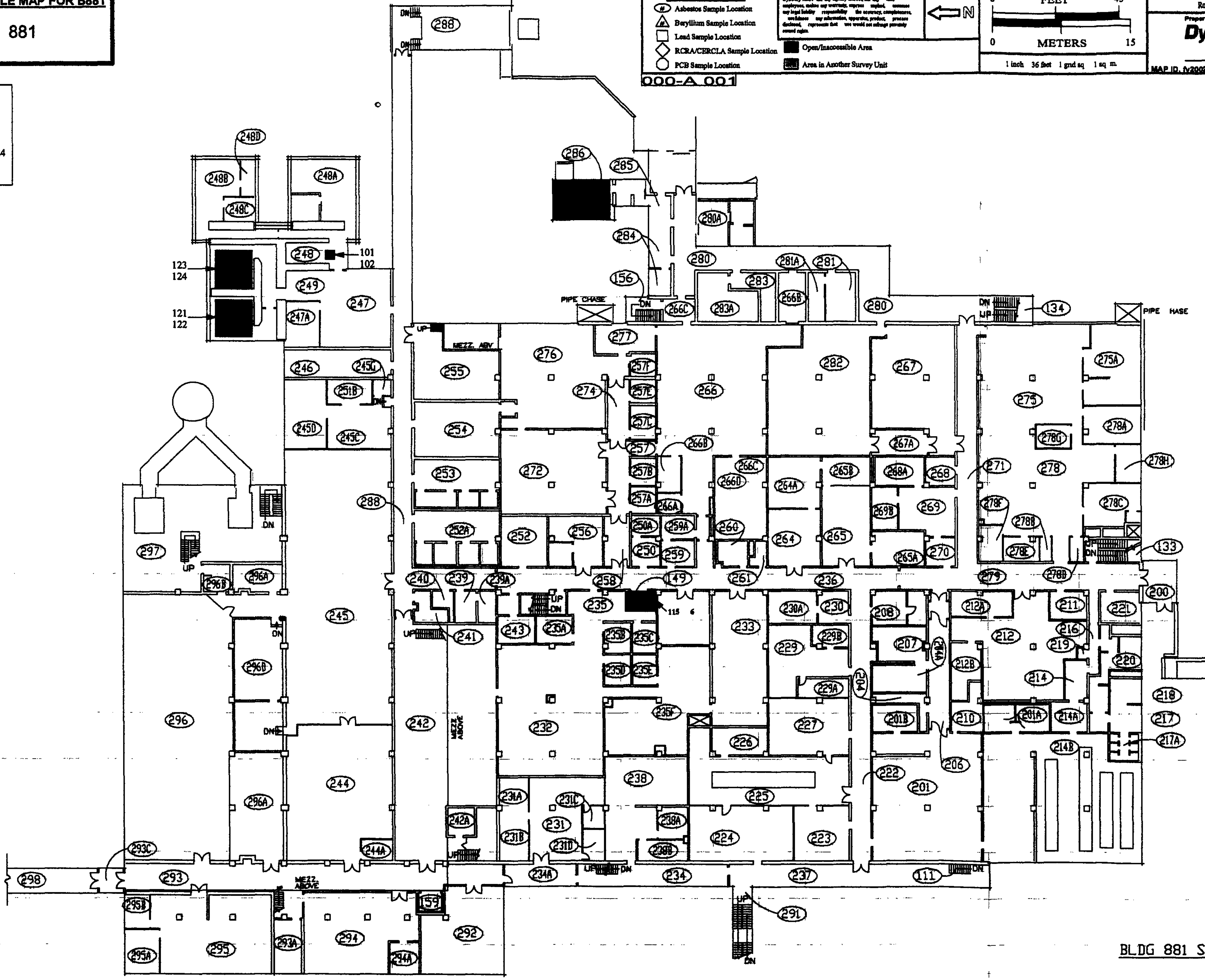
BERYLLIUM SAMPLE MAP FOR B881

Building 881

Sump Location
Elevator Location
881 8242001 315 101
881 8242001 315 102
881 9132001 315 121 to 124
881 9062001 315 115
881 9062001 315 116



SURVEY MAP LEGEND
Asbestos Sample Location
Beryllium Sample Location
Lead Sample Location
RCRA/CERCLA Sample Location
PCB Sample Location
Open/Inaccessible Area
Area in Another Survey Unit

N

FEET 0 45
METERS 0 15
1 inch 36 feet 1 grid sq 1 sq m

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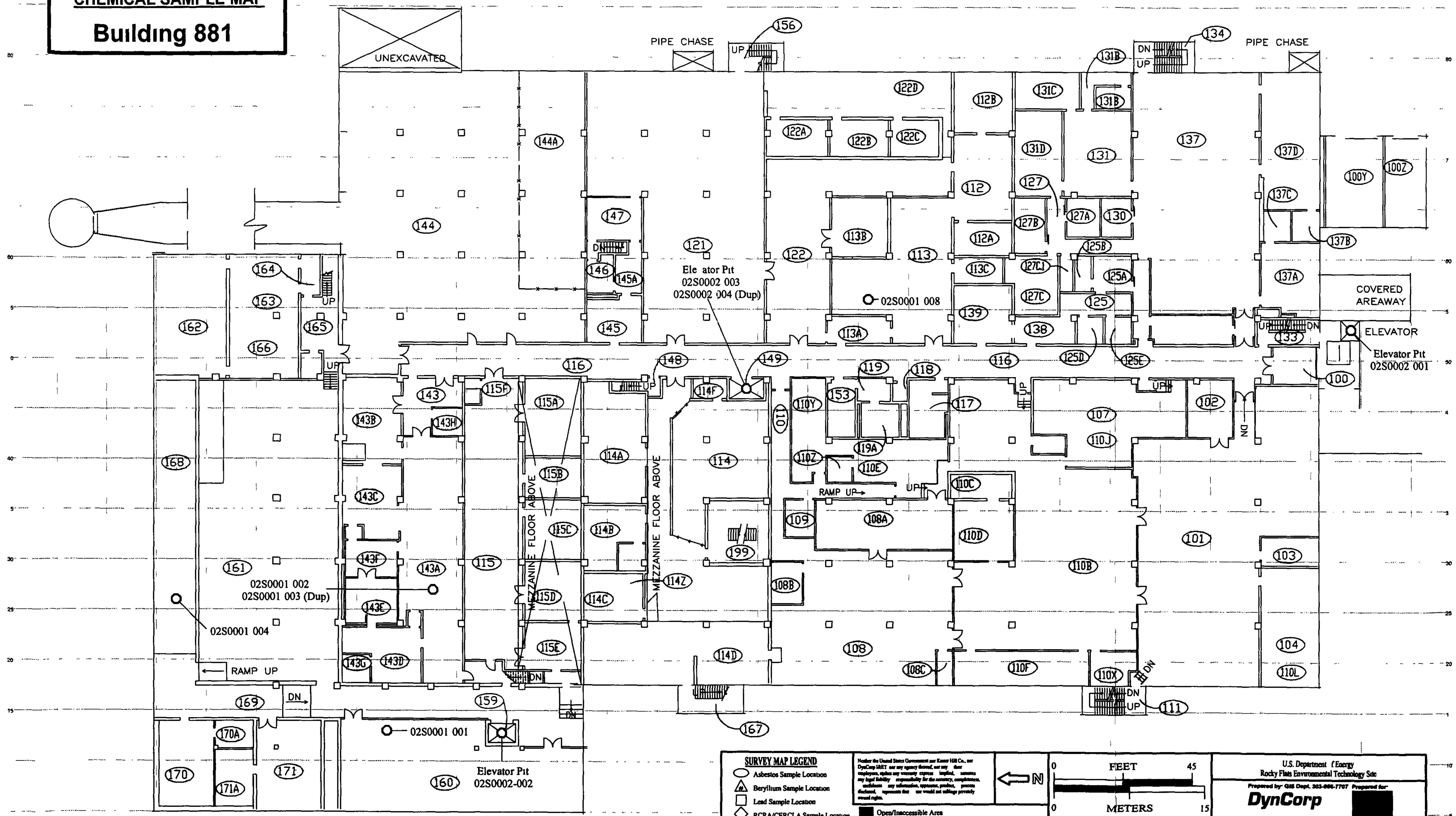
CHEMICAL SAMPLE MAP

Building 881



BLDG 881 FIRST FLOOR PLAN

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area Another Survey U

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FEET 0 45
METERS 0 15
1 inch 30 feet grid sq. 1 sq m.

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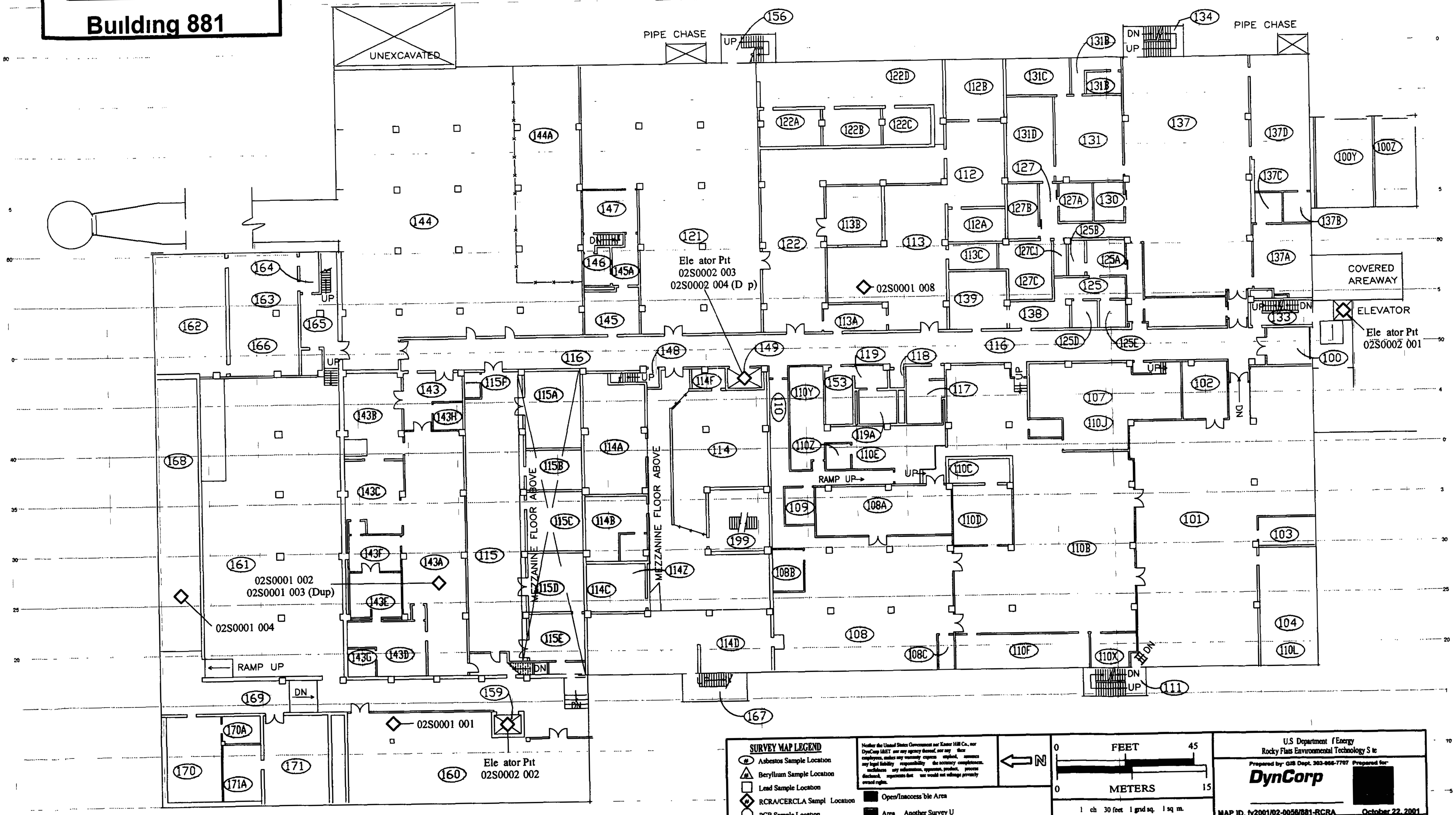
CHEMICAL SAMPLE MAP

Building 881



BLDG 881 FIRST FLOOR PLAN

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sampl Location
- PCB Sample Location

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- Open/Inaccess ble Area
- Area Another Survey U

N

FEET 0 45

METERS 0 15

1 ch 30 feet 1 grid sq. 1 sq m.

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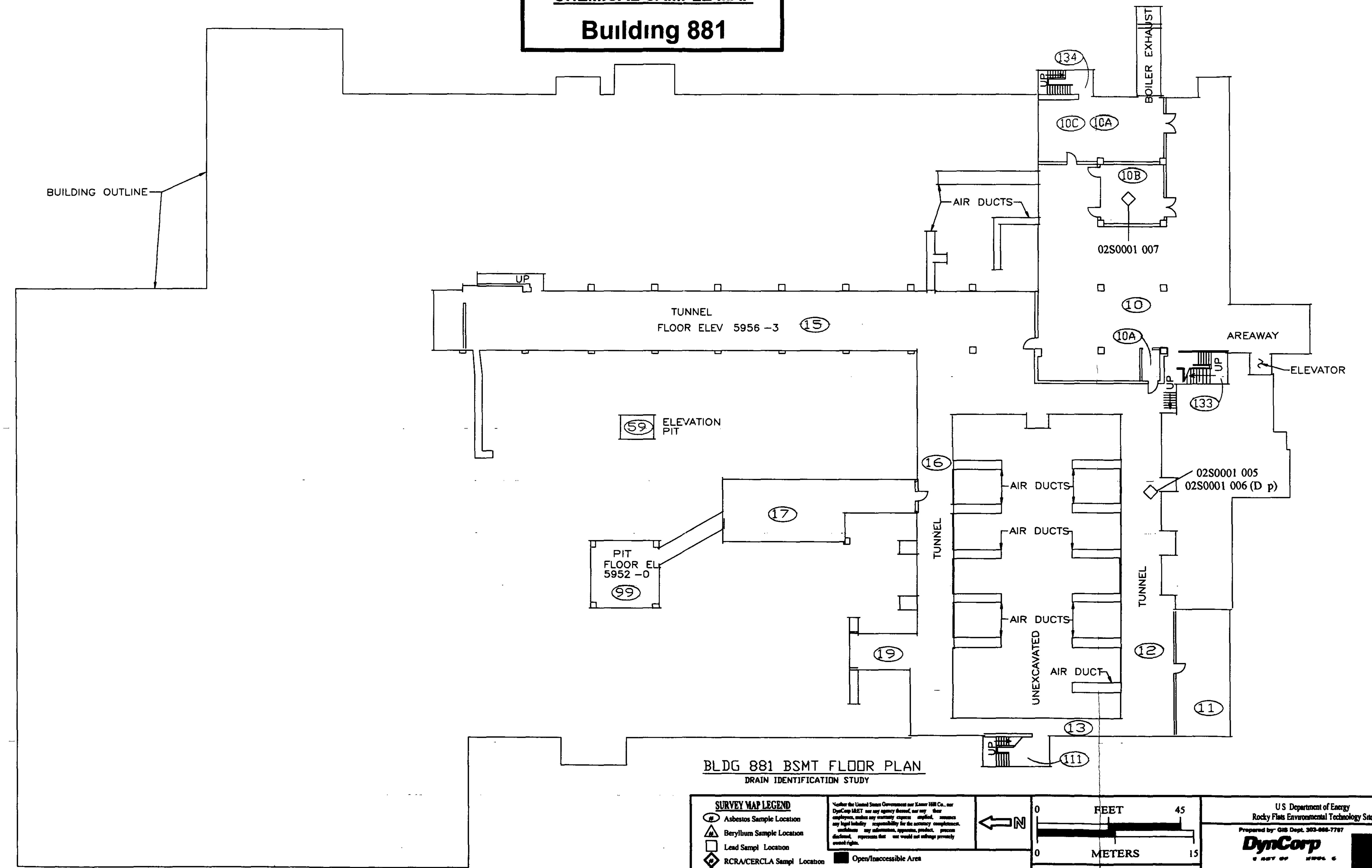
CHEMICAL SAMPLE MAP

Building 881



BLDG 881 BSMT FLOOR PLAN

DRAIN IDENTIFICATION STUDY

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sampl Location
- RCRA/CERCLA Sampl Location
- PCB Sampl Location
- Open/Inaccessible Area
- Area Another Survey U

FEET 0 45

METERS 0 15

1 nch 30 feet 1 grid sq. 1 sq. m.

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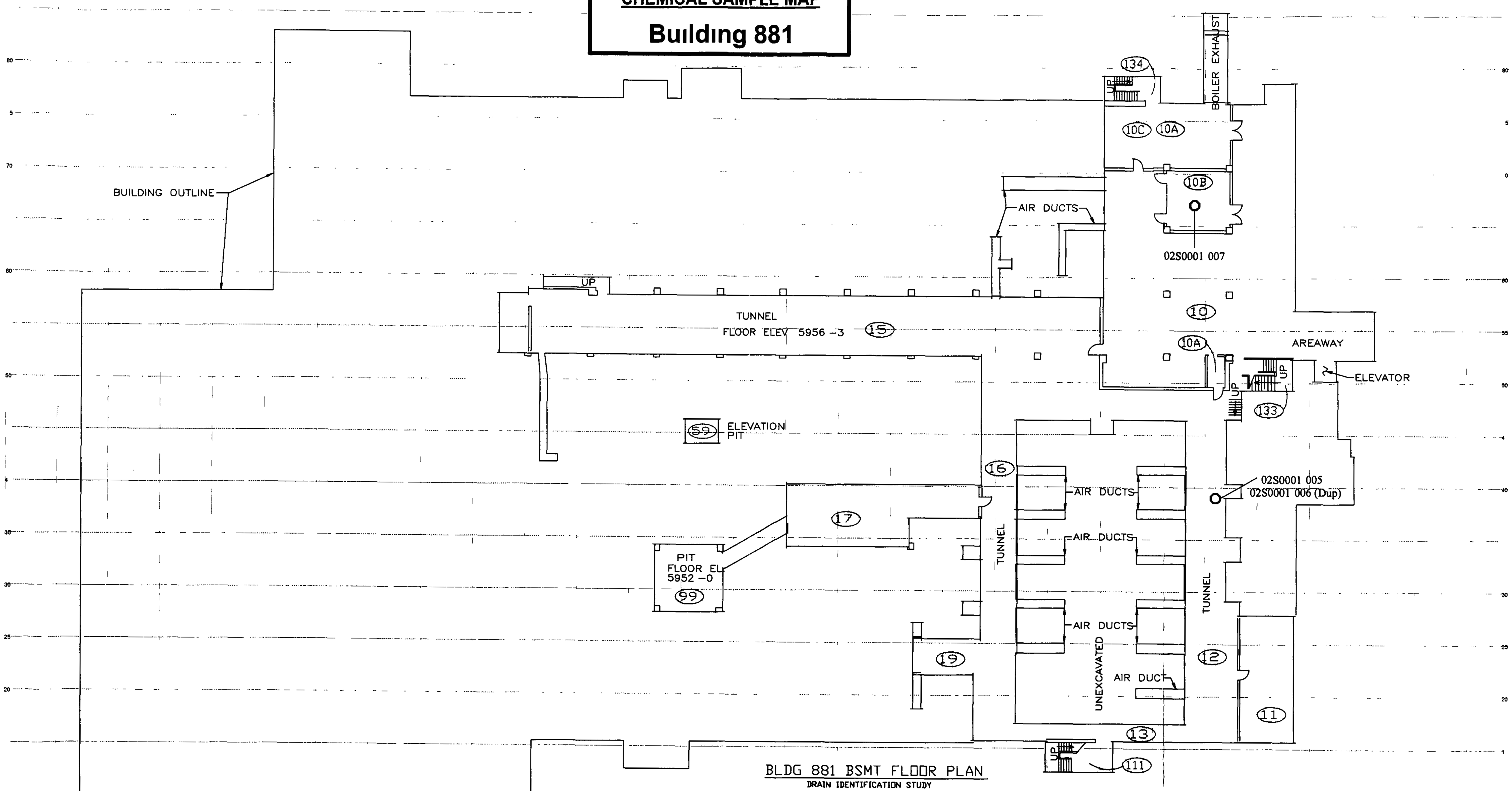
CHEMICAL SAMPLE MAP
Building 881



BLDG 881 BSMT FLOOR PLAN
DRAIN IDENTIFICATION STUDY

SURVEY MAP LEGEND
- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sampl Loca on
- PCB Sample Location
- Open/Inaccessible Area
- Area Another Survey U

N

FEET 0 45
METERS 0 15
1 inch 30 feet 1 grid sq 1 sq .

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Rocky Flats Environmental Technology Site
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DynCorp

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October 22, 2001

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